MASS CUSTOMIZED LEARNING: AN EXPLORATORY CASE STUDY OF IMPLEMENTATION IN TWO SCHOOLS

by

Edward William Benning

Bachelor of Arts in Secondary Social Science Education, Frostburg State University, 2001

Master of Education in Administrative and Policy Studies, University of Pittsburgh, 2007

Submitted to the Graduate Faculty of

the School of Education in partial fulfillment

of the requirements for the degree of

Doctor of Education

University of Pittsburgh

2018

UNIVERSITY OF PITTSBURGH

SCHOOL OF EDUCATION

This dissertation overview was presented

by

Edward William Benning

It was defended on

April 10, 2018

and approved by

Dr. Diane Kirk, Clinical Associate Professor, Administrative and Policy Studies

Dr. Jennifer Russell, Associate Professor, Learning Sciences and Policy, School of Education

Dr. Charlene Trovato, Associate Professor, Administrative and Policy Studies

Dissertation Advisor: Dr. Cynthia Tananis, Associate Professor, Administrative and Policy Studies

MASS CUSTOMIZED LEARNING: AN EXPLORATORY CASE STUDY OF IMPLEMENTATION IN TWO SCHOOLS

Edward William Benning, Ed.D.

University of Pittsburgh, 2018

This qualitative study explores the implementation of a Mass Customized Learning (MCL)-personalized learning process at two Pennsylvania school districts. MCL follows the vision of Charles Schwahn and Beatrice McGarvey, educators and authors who believe that there can and should be an ideal learning experience for each learner. A review of literature focuses on a range of instructional strategies that build toward MCL-based personalized learning. It also reveals critical elements prior to MCL implementation (Schwahn & McGarvey, 2012). The review of literature preludes the triangulation of documentation, onsite visit and interviews data from the participating districts implementing MCL within the MCL-associated six Focused Concepts for analyzing MCL considerations and implementation. The six Focused Concepts include: (1) Strategic Design; (2) Transitional Factors; (3) Transformational Technologies; (4) Leadership; (5) Encountered Challenges and (6) Next Steps. The review of literature findings revealed more about the first four Focused Concepts than the last two. However, the literature findings relate to each MCL-based Focused Concept. A Focused Concepts continuum rubric helps identify where each case study school aligns with MCL at the time of the study. Emerging themes findings from triangulation of data within the six Focused Concepts explain how a school system could

sustain MCL. The qualitative study concludes with considerations for further study, considerations for further growth, the author's self-considerations professionally, a summary and next steps.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

PREFACE

This journey was successful in large part to the influences and support from many individuals. First, a big thank you and eternal appreciation to my wife, my kids and God for their continued encouragement, accommodations and patience throughout this process. Thanks also to my parents, my grandparents, my in-laws and all of those in my family who contributed efforts in too many ways to mention.

I thank too my University of Pittsburgh's School of Education Dissertation committee for providing the guidance and expertise to navigate this journey then complete such a document. Equally, I greatly appreciate and thank those who served as an extension of my Dissertation committee. I would not be finished without the individual and collective help from everyone associated with Pitt.

Last but certainly not least, thank you to the many professional colleagues and/or mentors throughout my years in education. They have and continue to provide excellent guidance. I continue to appreciate their friendship and learn from their advice.

Prime Mover by the band, Rush (1997), states in its lyrics that point of a journey is not arrive and that anything can happen. Coincidently, its release date was the same year as another academic milestone for me. Regardless, I hope that my findings will prove as valuable to you, the reader, as they were to me while you continue your learning. Though my Dissertation is finished, I acknowledge that there remains a lot to learn in lieu of viewing this milestone as I

have arrived. Instead, I look forward to continuing my journey of seeking to do what is best for students and making it happen. Enjoy the contents that follow and your journey as it happens!

1.0 INTRODUCTION

This qualitative study explores the planning and current implementation issues of sustainability of a Mass Customized Learning (MCL) process when school districts implement it with fidelity. MCL follows the vision of Charles Schwahn and Beatrice McGarvey, educators and authors who believe that there can and should be an ideal learning experience for each learner. The co-authors detail this belief in multiple MCL-related books. However, the 2012 book, *Inevitable: Mass Customized Learning: Learning in the Age of Empowerment*, is the primary resource that theoretically details the essential parts of how to plan for, lead and implement MCL (Schwahn & McGarvey, 2012).

MCL continues to grow in popularity through the "Mass Customized Learning National Alliance." Within the MCL National Alliance, there are six specific organizations with schools in five states. The MCL National Alliance uses each organization as a resource for collaboration and implementation of MCL within their school districts.

The selected school districts for this case study participate in one of the MCL National Alliance organizations and are from one of the five states actively participating in MCL. The data collected and analyzed from the selected schools will help to inform other districts that might consider implementing MCL.

1.1 STATEMENT OF THE PROBLEM

Public K-12 education continues to shift toward individualized learning initiatives each year, with personalized learning claiming to be the most advanced form of these learning opportunities (Basye, 2014). Every public school system has the opportunity to begin tailoring their educational approaches to the needs of the individual learners to the best of their ability. From a "one-size-fits-all" approach, differentiated instruction and individualized learning came to the foreground as strategies to improve student learning (McClaskey & Bray, 2016; Sparks, 2015; Tomlinson, 2015; Tomlinson & Allen, 2000).

Within the same timeframe, several customized, personalized capabilities have made life more accessible and transformed society from the "Industrial Age" to one of an "Information Age." What used to be an organization-first focused mindset is now customer or client-first mindset (Schwahn & McGarvey, 2012). Among the key tenets is the Transformational Technology concept. The Transformational Technology concept focuses on using technology to personalize the needs of the individual. This concept helped evolve Apple, Amazon and several other organizations into world industry leaders (Schwahn & McGarvey, 2012). Similarly, Transformational Technology in education, in part due to the technological innovations of industry-leading organizations such as Apple and Google, now has the capability to personalize learning based on the students' individual needs. Schools can now use technology to personalize schedules, learning goals, learning styles, learning content or any combination of each in an efficient and effective way more so than in the past (Schwahn & McGarvey, 2012).

However, shifts in education with developing technological advances proceed from a "one-size-fits-all" of yesteryear to a personalized learning opportunity slower than the speed for which those in society now expect. In addition, almost two decades into the 21st Century,

educators still have few resources for which they can explore the key components of this emerging educational approach (Toshalis & Nakkula, 2012). At its most personalized approach, though, technology helps a student, or learner, completely adapt the learning experience and content delivery based on the individual's performance (Bulger, 2016). A personalized learning opportunity focuses on the specific needs of the learner. It goes beyond differentiated and individualized approaches to learning. Equally, Mass Customized Learning (MCL) builds upon a personalized learning approach in multiple, specific areas. According to Schwahn and McGarvey (2012), MCL uses learner-centered, flexible scheduling and Transformational Technology. Flexible scheduling creates options for students that will maximize learning opportunities. The learner remains at the center of the scheduling process. A second key is Transformational Technology, which allows learning to remain continuously learner-centered through online access and technology. Transformational Technology approach to break down traditional, "Weight Bearing Walls" (WBWs) in education that would otherwise limit learning opportunities for each learner. WBWs include grade levels, students assigned to classrooms, a traditional bell schedule, courses or curriculum, textbooks, an ABC grading system, report cards, a nine-month school calendar, or any other associated traditional learning approach that prevents a student from maximizing learning opportunities.

Some school systems within five states in particular took additional measures beyond the basic approaches associated with differentiated instruction, individualization and personalized learning opportunities. These particular school systems developed personalized learning to the degree of Mass Customized Learning (MCL). These particular states include Maine, New Hampshire, South Dakota, Pennsylvania and California. Maine's MCL cohort uses the title, "Maine Cohort for Customized Learning," or MCCL. New Hampshire, despite being a different

state, is also within the MCCL (Maine Cohort for Customized Learning, 2017). South Dakota's cohort identifies as "Education Online" within the intricacies of the South Dakota Department of Education's approach to instruction (South Dakota Department of Education, Education Online, 2017). Lastly, the "Mass Customized Learning Mid-Atlantic Consortium" is Pennsylvania's cohort (Mass Customized Learning Mid-Atlantic Consortium, 2017). Certain school districts in California also build upon the ideals identified in the book, *Inevitable: Mass Customized Learning: Learning in the Age of Empowerment.* Each school system seemingly promotes MCL to meet the personalized needs of students or learners within their associated districts.

However, as technology and flexibility in schedules continue to become more commonplace in daily life for adolescents and adults, the pace of societal developments seem to increase faster than ever before. With the advantages, disadvantages and conveniences of technology, the educational opportunities for schools, districts and its students also potentially develop. As a result, grades K-12 learning opportunities potentially transition beyond current individualized measures to more personalized in part because of technology. Equally, once learning transitions to a personalized opportunity, how it remains as such is of paramount importance.

1.2 PURPOSE

This study seeks to explore the Mass Customized Learning (MCL) implementation and sustainability in two schools within two districts from Pennsylvania. The selected school districts in Pennsylvania are implementing MCL at the elementary or at the secondary level. The

purpose for exploring an elementary level and then a secondary level is to gain a more comprehensive understanding of how MCL looks at each level.

Most importantly, understanding the planning, implementation and sustainability measures will help identify the potential for MCL within a district or school. Equally, it will help educational leaders at other schools determine if MCL is sustainable in the long term.

1.3 RESEARCH QUESTIONS

This case study seeks to gather information from two school districts in Pennsylvania via documentation artifacts collection, from an onsite visit and through an interview process for further exploring Mass Customized Learning (MCL). The study will seek clarification on three primary questions to determine if this enhanced personalized learning process would be realistic to implement at a district currently not implementing MCL.

The three specific research questions for this study are the following:

1. What considerations led to the adoption of Mass Customized Learning in the two schools?
2. How is Mass Customized Learning being implemented and evaluated in the two schools?
3. How does the implementation align with the Mass Customized Learning model?

1.4 BACKGROUND TO THE PROBLEM

The basis for this study stems from three specific experiences. The first of the three experiences occurred during the 2012-2013 school year via my collaboration with a superintendent and associated MCL classroom observations during an internship opportunity. The internship was in partial requirement toward completing a Superintendent Letter of Eligibility program through the University of Pittsburgh. During the first experience, the superintendent of the School District in which I interned introduced me to the Mass Customized Learning (MCL) concept by sharing the books, *Inevitable: Mass Customized Learning - Learning in the Age of Empowerment*, by Schwahn and McGarvey (2012). In addition, the superintendent and I discussed its details as well as the process multiple times throughout numerous months. The conversations included the district's current implementation processes and next steps for expansion of MCL in future years. The second experience involved observations of various professional development days throughout the summer months of 2012. During this time, the staff from each school throughout the district helped to develop the essential parts of its respective Strategic Design based upon the District's Strategic Design. Similar to the District's Strategic Design, each building level's Strategic Design included a vision, a mission statement and core values. Each school's staff agreed upon and completed its Strategic Design's characteristics by the end of the designated professional development days. Equally, the second experience also included repeatedly observing the MCL implementation at the elementary level then extensively discussing the process with the school's principal and staff members.

The third experience occurred via a pre-arranged observation during this internship opportunity. While serving as the principal at an elementary school in Pennsylvania, multiple staff members and I observed MCL implementation during a one-day group observation at

another elementary school in a neighboring county. We observed MCL implementation in multiple classrooms. With both the individual and group observations, there were a number of opportunities to discuss thoughts, progress, concerns and potential next steps with their principal.

With each observation, there were many activities associated with the critical elements of MCL. The students, or learners, used technology to work individually, in small groups, and/or with their teachers or facilitators, in a seminar format. The learners worked to master their personalized Learner Outcome at their own pace. This was despite the presence of multiple grade level learners, from a wide variety of Mathematics-based learning levels and within a wide range of concepts for the elementary-to-middle school Mathematics curriculum. They remained actively engaged in their learning progressions. They maintained a common goal of demonstrating mastery on their specific content despite not having a designated timeframe within a class period to complete the lesson's objectives. The learners used their checklist from their facilitator. They used their personalized, technology-aided schedule as a guide for completing tasks and for meeting with facilitators. The facilitators actively monitored learner's progress associated with the Learner Outcomes. They also monitored the technology that enhanced the learning opportunities as the learners worked toward demonstrating mastery of the concept.

When the elementary school staff members observed a MCL-based upper elementary/middle school level classroom at a neighboring county's elementary school, they shared the same takeaway thoughts as I during individual opportunities earlier in the school year. Similar to those individual opportunities, the team of staff members also met with the facilitators and building level administrator to discuss the MCL planning and implementation process. Key aspects of the discussion included what MCL looks like in planning for implementation, who has the specific leadership roles in planning and how to continue maximizing learner opportunities

based on data-informed decisions. The process discussed on the individual and group occasions mirrored the Strategic Design process detailed in Schwahn and Spady's (2010) book *Total Leaders 2.0 - Leading in the Age of Empowerment,* along with *Inevitable: Mass Customized Learning - Learning in the Age of Empowerment* (Schwahn & McGarvey, 2012). The Strategic Design requires key factors such as a strategic direction and strategic alignment through the teamwork of multiple leaders throughout an organization to create a positive, learner-centered change (Schwahn & Spady, 2010; Schwahn & McGarvey, 2012).

The first three experiences were interesting and informative. Each gave general insight into Mass Customized Learning (MCL) in theory and implementation in the short term. However, the experiences were snapshots within a small timeframe. To help identify if MCL would be beneficial to pursue at my district of employment, there needed to be further exploration of other schools that are also implementing it.

The fourth MCL-related experience was a review of the literature. The review of literature built upon the interest and curiosities of the first three experiences. It examined MCL in further detail. In addition, it provided valuable information that supported the transition from a traditional, "one-size-fits-all," approach to education to one that goes beyond differentiation and individualization. With the proper conditions, personalization becomes possible, perhaps to the level that Schwahn and McGarvey (2012) promote with MCL.

Moreover, I planned to learn more about the considerations toward MCL, the implementation processes and next steps through documentation data collection, an onsite visit and through an interview process. I identified six key features regarding the planning and implementation of MCL from the literature. These key features provided the analytic lens for the case study. They included a) each school's vision or "Strategic Design," b) transitional factors,

c) Transformational Technologies, d) leadership influences, e) encountered challenges and f) next steps toward sustainability and growth.

1.5 SIGNIFICANCE OF THE STUDY

Technology and flexibility in one's schedule personalizes lives now more than ever before. The industries and organizations thriving the most now and in the future will continuously provide for their customers through these personalized measures. Schools also must continue transition from a "one-size-fits-all" approach into a personalized learning approach where, as Schwahn and McGarvey (2012) claim, Mass Customized Learning (MCL) can then become possible. The exploration of MCL in a school system could greatly help a district's leadership team to determine if such an approach could work for them.

The context of this study was timely and significant for two main reasons. First, there are an increasing number of schools within the various consortiums and states beginning to explore the possibility of MCL. Some are implementing it at the elementary level and/or secondary level. Second, exploring how schools use Transformational Technology and flexible scheduling to increase MCL-based personalized learning increases in relevance as technology grows in influence and focus throughout society. This case study will explore these timely and significant factors.

1.6 SUMMARY AND NEXT STEPS

Society continues to become more dependent on the conveniences and personalization associated with technology and flexible schedules. Similarly, American education continues its transition. Transformational Technology across society and in education are developing at a faster rate than ever before (Schwahn & McGarvey, 2012). Beyond differentiated instruction, individualization and personalization components that benefit students, the co-authors of Mass Customized Learning (MCL) claim that this process provides a complete personalized process. The student, or learner, is at the center of every decision. Schwahn and McGarvey (2012) believe that the once a school system implements MCL, it will be truly doing what is best for learners. However, despite the availability of books on MCL, there are still limited examples of how the process looks in implementation and even less about the sustainability of MCL long term.

The following review of the literature will detail the foundational stages of learning opportunities that build toward MCL-based personalized learning. The findings from the review of literature coupled with the findings from the case studies will help to determine if a school system should implement and then maintain MCL long term.

1.7 ORGANIZATION OF THE CHAPTERS

The chapters provide the reader with educational approaches ranging from a “one-size-fits-all” to that of a Mass Customized Learning (MCL) approach. Chapter 2 provides a review of the literature regarding the theories, terms and associated educational approaches. Chapter 3 summarizes the context and description of the case study. It details the research participants, the

research design and the specific focus areas. Chapter 3 also identifies the process for collecting and analyzing data that will then serve as the foundation for the remaining chapters of the dissertation. Chapter 4 details the first school district participant's MCL planning and implementation process along with how this school aligns with the Focused Concepts continuum rubric. Chapter 5 details the second school district participant's MCL planning and implementation process along with how this school aligns with the Focused Concepts continuum rubric. Chapter 6 identifies, and then expands on the emerging themes findings from the two case study schools' data analysis. Lastly, Chapter 7 provides implications for future research, next steps for professional growth and MCL considerations within my district of employment.

1.8 GLOSSARY OF TERMS

Several Mass Customized Learning-based terms from the review of literature along with the two school district participants help articulate findings for this qualitative study and beyond. The most commonly referred terms, listed alphabetically below, help the reader relate to the concepts and themes.

Differentiation/Differentiated Instruction – the lowest level of accommodating a student's needs; teachers tailor instruction to meet the learning needs, preferences and goals of the student group are the same and the instructional approach is teacher-centered.

Individualization/Individualized Learning – a higher level for learning beyond differentiation; teachers tailor instruction to meet the learning needs, preferences and goals of individual students and the instructional approach remains teacher-centered though individualized learning adds a flexible timeframe.

Mass Customized Learning – enhanced personalized learning opportunities that incorporate "Transformational Technologies" and flexible schedules that are completely student/learner-centered during the school day and beyond.

Mass Customized Learning Encountered Challenges – one of the six Focused Concepts areas within this qualitative study; identify the challenges, anticipated and unanticipated, that each district participant encountered during MCL planning and implementation.

Mass Customized Learning Leadership – one of the six Focused Concepts areas within this qualitative study; leadership domains, five total, within MCL that collectively form the leadership components of Strategic Design: (1) authentic leaders, (2) visionary leaders, (3) relational leaders, (4) quality leaders and (5) service leaders.

Mass Customized Learning Next Steps – one of the six Focused Concept areas within the qualitative study that identify sustainability measures for each district participant

Personalization/Personalized Learning – a higher level for learning beyond differentiation and individualization; a student takes ownership of his or her schedule; the teacher transitions to a facilitator for the student's plan rather than the student continuing to follow the teacher's lead.

Mass Customized Learning Strategic Design – one of the six Focused Concepts areas within this qualitative study; has two key components, the strategic direction and the strategic alignment. Strategic direction includes the organization's core values, its mission or exit learner outcomes and the vision of the organization. Strategic alignment refers to aligning people, policies, processes and organizational structure to accomplish the mission.

Mass Customized Learning Transformational Technologies – one of the six Focused Concepts areas within this qualitative study; technological components that allow learning to remain continuously student-centered through online access and technology; The school bases all

technological decisions and purchases on the positive impact the technology will have on the learners; examples include “Watson,” “Schedoole.com,” “Empower” and “Flextime Manager”

Mass Customized Learning Transitional Factors – one of the six Focused Concepts areas; “Weight Bearing Walls” include traditional school structure elements such as the use of grade levels, students assigned to classrooms, class periods or bell schedules, courses/curriculum, textbooks, solely using paper and pencils in lieu of technology incorporation, a letter grading system, report cards, learning restricted during school time only and the nine-month school year. MCL seeks to change these traditional structures during implementation.

2.0 REVIEW OF LITERATURE

Dylan Wiliam is a Scottish professor and author of many books on formative assessment and professional development. Wiliam (2012) believes that schools must have a clear focus in preparation for the implementation of the highest quality learning opportunities for each learner. In essence, Wiliam focuses on clarity in the goals of education to meet the personalized learning needs of the individual learner.

Personalized learning, in theory, goes beyond differentiation and individualization. Personalized learning affords the learner a degree of choice about learning. However, individualization is important. Individualization refers to the strategies aiming to guarantee all students' mastery of the same learning objectives by adjusting the pace to the progression of the learner. The teacher develops the best solution based on learner performance. Personalization also incorporates a student's individual abilities, sensibilities, and competencies to develop a student's overall potential (McClaskey & Bray, 2016).

Technology increasingly promotes personalized opportunities. Many students think differently because of the technology available at their fingertips (McHugh, 2005). However, personalized opportunities in life do not always equate to personalized learning opportunities in school. The future direction of education indicates that further differentiation in its processes for individualizing education, either with or without technology, is a prerequisite to the process.

Additionally, technology-supported personalized instruction and what is best for students at their learning levels will likely help personalize education (McHugh, 2005).

Within the last two decades, several personalized learning opportunities developed. Some opportunities focused on instruction while others concentrated on structure or student engagement. Regardless, as with the developments associated with differentiation and individualization, personalized learning has gained momentum within this timeframe. Equally, a newer and personalized learning process known as Mass Customized Learning (MCL) is expanding each year. It claims to use an outside-of-the-box process that, through technological developments and flexible scheduling, implements an enhanced personalized learning approach during the school day and beyond. However, current research is vague as to the extent of which an MCL personalized learning process is sustainable.

This review of the literature focuses on identifying the impact of various initiatives in education and the technological advances in society that helped establish current educational trends. There will be exploration of individualized learning initiatives and how they compare with personalized learning opportunities. Finally, there will be an investigation of the "Mass Customized Learning" (MCL) process with a specific focus on how this process associates with personalized learning and the technological advances available. This investigation will establish the foundations for exploration of MCL planning and implementation with suggested fidelity and subsequent sustainability.

2.1 INDIVIDUALIZED LEARNING INITIATIVES

History shows that individualized learning occurred before technology was an integral part of society. Increases in teacher quality and an emphasis on professional development played a role. The development of Response to Intervention (RtI) and Multi-Tiered Systems of Support (MTSS) provided measures for helping individualize education.

2.1.1 Individualized Learning Initiatives History and Overview

Baker and Goldberg (1970) defined individualized education as:

> A highly flexible system of multiple materials and procedures, in which the student is given substantial responsibility for planning and carrying out his own organized program of studies, with the assistance of his teachers, and in which his progress is determined solely in the terms of those plans (p. 775).

Seven years later, Glen Heathers (1977), a consultant for the Research for Better Schools Incorporated, defined individualized instruction as, "any steps taken in planning and conducting programs of studies and lessons that suited them to the individual student's learning needs, learning readiness, and learner characteristics or 'learning style'" (p. 342).

The commonalities between the definitions from Baker and Goldberg (1970) and Heathers (1977) included two main factors: individualized student plan of studies and individualized student learning styles. Teachers were encouraged to consider both factors in planning that centered on a common lesson. While the researchers of the 1970s focused on

initiatives at the classroom level to individualize learning for students, research of the 21st Century extended this responsibility.

Individualized learning strategies promote students' mastery of the same learning objectives by adjusting to the pace of the individual learner's progression during a unified lesson. The teacher develops the best solution based on learner performance (McClaskey & Bray, 2016). The individualized learning process transitioned to a personalized learning process where the individual student is the starting point for planning versus the individual lesson.

Basye (2014) explained that the process toward personalized learning is a three-step process. Differentiated instruction is the first step. With differentiation, teachers tailor instruction to meet the learning needs, preferences and goals of individual students. However, the overall academic goals for the student cohort are the same despite a teacher's decision to use available resources and approaches necessary to connect with a student or cohort overall. Individualized learning opportunities are the second step. In lieu of accommodating the learning needs of the individual student or student cohort overall based on the unified lesson, individualized learning adds a flexible timeframe. Individualized learning goes beyond the how of education and incorporates "when." For example, some students may progress faster through the lesson's concept while others take longer. Students learn at their own pace based on pre-established standards for the student. Finally, personalized learning is the third part of the process. With personalized learning, the individual student takes ownership of his or her schedule. The teacher transitions to a facilitator for the student's plan rather than the student continuing to follow the teacher's lead. Individualized learning is a key step toward personalized learning (Basye, 2014).

2.1.2 Highly Qualified Teachers and Professional Development

Sanders and Rivers (1996) identified that having highly qualified teachers played an integral role and demonstrated a distinct correlation to student academic achievement. Professional development is a focal point toward increasing student achievement despite a comparative lack of technological advancements.

According to Darling-Hammond (2005), professional development centered on collaboration and teacher reflection. For both, the approaches were one of two scenarios: the traditional, face-to-face interactions and a new and emerging focus on using online opportunities. Darling-Hammond (2005) surmised that, at the time, online professional development lacked collaboration and teacher reflection due perhaps due to bland online delivery or other factors such as an initial lack of technology opportunities, poor infrastructures, or participant technology experiences that limited independent learning. Regardless, for the time, online professional development struggled.

Creasy (2011) examined the effectiveness of Professional Development Schools (PDS) using external experts at the university level for training purposes. The new approach, coupled with traditional face-to-face interactions and the developing online opportunities, greatly helped with effective practices leading to positive professional development and subsequently teacher change (Creasy, 2011).

In a study reported by Thomas and Larwin (2016) in the Journal of Educational Leadership in Action, team members examined means to improve student achievement through professional development. During several hours of research and dialogue with colleagues, the team members realized that the highest quality of professional development toward improving

student achievement was a “multi-faceted issue” with equally complex answers (Thomas & Larwin, 2016).

These studies affirmed that there was a need for professional development and initiatives to help promote individualized learning. Equally, the research also identified how a lack of technological innovations and availability potentially slowed the individualized learning process for staff and the students.

2.1.3 Response to Intervention and Multi-Tiered Systems of Support

Increasing individualized learning processes for students placed a heavier focus on formative assessments. Two main examples of formative assessment initiatives include the Response to Intervention (RTI) and Multi-Tier System of Supports (MTSS) (RTI Action Network, 2016). Note that Pennsylvania refers to it as Response to Intervention and Instruction (RTII). Regardless of the acronym, RtI or RtII, it is synonymous with individualized intervention measures.

The RTI Action Network, created by the National Center for Learning Disabilities, identifies RTI as a process for providing effective instruction and intervention across three tiers to all students. Assessment, progress monitoring, and data-driven decision-making are common factors in the process (NCLD Organization, 2016). Tier I, the classroom level intervention, focuses on all students within a cohort. Traditionally, 80%-90% of the cohort will remain in the Tier I intervention level. Tier II, or “Strategic” level students, focus on between 5% and 15% of the student cohort. Finally, Tier III, or “Intensive” level students identify between 1% and 5% of the cohort (RTI Action Network, 2016). The data used from formative assessments and

curriculum-based planned interventions then helps differentiate the instruction based on the academic need (RTI Action Network, 2016).

The Multi-Tier System of Supports, or MTSS, uses the RtI/RtII, framework to build upon the tiered approach in four main structural ways to promote student achievement and individualized learning opportunities (RtI Action Network, 2016). First, there are multiple levels of support for learners from struggling through advanced via formative assessments. Second, MTSS places an emphasis on the social and emotional aspects of education along with the academic aspects. Third, teachers work as teams versus individually. Finally, the MTSS initiatives tend to be building wide versus strictly at the classroom level (RtI Action Network, 2016). Therefore, a heavier focus on professional learning communities (PLCs) in which teachers analyzed student data then formulated an action plan further influenced individualized student learning opportunities (Pritchard & Marshall, 2002).

Lastly, another individualized learning initiative developed substantially over the past 25 years was project-based learning (PBL) (Boss, 2011). Within the PBL overarching concept are PBL assessments, or PBLAs. PBLAs differ in overall principle from formative assessments while sharing characteristics of differentiated instruction because there are additional layers.

According to Yvonne Marie Andres and Al Rogers (2016), co-founders and current directors of a three-decade initiative known as "Global School Net," there are several common characteristics of PBLAs that provide differentiated instructional means toward individualized learning. In short, students solve a problem or challenge that may or may not have a predetermined solution with the intention of reaching the solution. Rubrics, a prescribed framework, and individual student responsibility for completing the necessary tasks throughout

the project with some amount of choice within the framework prelude whatever the final product may entail (Rogers & Rogers, 2016).

2.2 INDIVIDUALIZED LEARNING INITIATIVES BENEFITS AND CHALLENGES

There are three important areas of individualized learning initiatives. They include instructional-based initiatives, structural-based learning initiatives and active student engagement-based learning initiatives. Each theoretical or conceptual individualized learning initiative benefitted and challenged the structural and student engagement measures that prompted education's steady ascent toward personalized learning.

2.2.1 Theoretical/Conceptual Instructional Approaches

John Hattie (2009) identifies that teaching is an art based on the concept of what happens between the student, or learner, and the teacher and vice versa. He believes that the act of teaching is successful after the teacher sets the lesson's structure, organizes the classroom and then delivers the content. The teacher has the students' best interests and learning opportunities in mind. The process takes time, passion, patience and specific attention to what is working. With the thoughts of Hattie (2009), the theories behind differentiation and individualization develop. There are similarities between the two terms but there are also distinct differences. In both cases, they are steps in the process toward personalized learning, the predominant concept associated with Mass Customized Learning. Differentiation, however, identifies the foundational step toward personalized learning.

2.2.1.1 Differentiation

The ideals of individualized instructional-based initiatives center on meeting the needs of each learner or learner group, depending on the implementation of the instruction. There are various beliefs regarding the theories behind differentiation. Some believe that differentiation is, at its base, not a specific approach but a basic tenet of all good instruction. A teacher develops relationships with his or her students and presents materials and assignments in ways that respond to the student's interests and needs (Tomlinson, 2015). However, others believe that it is the approach of the lesson and then the process associated with identifying students' individual learning strengths, needs, and interests and adapting lessons to match them (Sparks, 2015). The differentiation process advocates for the differences among students within classrooms. Its main idea is to accommodate the different ways for which students learn. The process involves a strong understanding of educational theory and research. It also involves active planning, attention to student differences within the classroom, high quality curricula, and common sense.

Instructional-based learning opportunities in their simplest form include differentiated instruction techniques. Various learning aspects contribute to differentiated instruction. Examples include the Universal Design for Learning and Howard Gardner's types of learning principles (Basye, 2014). However, differentiated instruction is the overarching concept beyond these approaches (Tomlinson & Allen, 2000).

Differentiation has become a popular approach to helping diverse students learn together. Differentiation is very similar to other instructional models such as Response-to-Intervention (RtI) and Multi-Tiered Systems of Support (MTSS) where teachers vary their approach to the same material with different students in the same classroom based on an individualized, data-driven instruction. The teacher tweaks and scaffolds instruction where and when necessary. In

addition, the intention of assignments are to help students of different ability and interest levels meet the same goals (Sparks, 2015). Differentiation by the teacher and at its core of implementation begins with a formative assessment.

Carnegie Mellon University, on its "Eberly Center: Teaching Excellence and Educational Innovation" section of its website, defines formative assessments and explains their overall goal as:

> Monitor student learning to provide ongoing feedback that can be used by the instructor and the students to guide improvements in the ongoing teaching and learning context. Formative assessments are generally low stakes, which means that they have low or no point value (Carnegie Mellon University, para. 1, 3).

This approach, whether the instructional leader is a professor or teacher, identifies the students' differences, appreciates them and uses them as the basis for instructional planning (Tomlinson & Allen, 2000). The formative assessments establish the association between a teacher's initial evaluations of the students' academic level and the application of appropriate instruction based on students' needs and interests.

While the teacher uses formative assessments as an evaluative measure for implementing differentiated instruction, differentiation also begins with a concentrated focus on groups of learners. Teachers then adjust to the learning needs of the groups of learners based on the explicit needs of the group. With differentiation, the teacher leads the instruction based on the designated learning needs of the group with the goal of students learning the same objectives by the end of the lesson. When implementing a lesson, available technology and resources focus on best practice for groups of learners. Meanwhile, the teacher guides them to the overall goals within the lesson's allotted time, day and grade level. Equally important, there is an assessment

for learning mainly through time-based testing measures. The differentiation process comes full circle when teachers then provide feedback to their student cohort to advance the students' learning. This process is cyclical in nature (McClaskey & Bray, 2016).

The underlying theme is the continuous focus on the learner group within the context of the lesson. This can prove beneficial in that the student groups can learn through different means. However, there is still a focus on a traditional group learning approach with restrictions to the learning process such as time, grade levels, and time-based assessments.

2.2.1.2 Individualization

Unlike differentiated instruction, individualization tailors instruction by time and the individual learner's needs. During the differentiated lesson, a teacher may make individualized time accommodations through chunking material into smaller steps while allowing students time to master these steps at different paces. Other time-based individualized strategies include skipping topics already mastered while getting more help on the topics that prove difficult (Sparks, 2015). With individualization, the lesson centers on the individual learner's needs as the teacher provides explicit instruction through customized lessons and tasks within the lesson (McClaskey & Bray, 2016).

Though customized tasks and explicit instruction create individualized approaches within the lesson, the expectations for the lesson remain the same as those not needing individual accommodations. Simultaneously and when available, technology and associated resources support the learning needs of the individual learner. The learner depends upon the teacher or other supporting staff members available during the lesson to help support their individual learning. Similar to differentiation, grade levels and seat time guide individualization. Therefore, the learners are still associated with pre-set measures such as a specific grade and

within designated times during a school day. However, summative assessments for individualization focus on confirmation of what the learners know and do not know (McClaskey & Bray, 2016).

Whereas differentiation or differentiated instruction transitions learning opportunities from a "one size fits all" approach to learning opportunities for groups of students, individualization transitions to the needs of the individual learner. However, the learner is still technically not at the center of the learning process; the teacher is instead. The teacher still determines the timeframe for the individualized learning opportunity. The school day is still the same allotted timeframe. Lastly, the lesson's expectations remain the same. Within the overarching concepts of differentiation and individualization, though, specific types of individualized approaches increase or decrease the likelihood of an instructional-based individualized learning process.

There are specific challenges of differentiation and individualization. First and perhaps foremost, is time. Time to plan lessons and then implement the lessons is difficult. Both take longer than instructing in the traditional means of "one-size-fits-all." Without professional development, excellent classroom management, and a complete commitment by teachers, students will not achieve as intended, individually or together. Second, the strategies are all teacher-led to some if not a large degree. Differentiation helps individualization as it focuses on groups of learners versus those of the entire cohort or class. Individualization makes strides toward personalization as it focuses on the needs of the learner. Both, however, continue to place heavy requirements on teachers, administrators and other adults within the school system to help learners achieve on an individual basis. Perhaps with the continued and increasing technological influences, fully personalized instructional-based learning initiatives will occur.

2.2.2 Structural-Based Strategies

School locations also create individualized learning opportunities. Examples of school-based learning opportunities include charter schools, cyber charter schools, and online and/or hybrid instructional options. Structural-based learning initiatives rely on the use of technology more with cyber charter schools and other online learning opportunities than perhaps with charter schools. Cyber charter schools eliminate the physical plant of the school and create individualized learning opportunities from anywhere that technology and the Internet are available. Equally, time is not as structured as with a traditional school setting (NCES, 2016).

2.2.2.1 Charter and Cyber Schools

According to the National Center for Educational Statistics (NCES) (2016), a public charter school is a "publicly funded school that is typically governed by a group or organization under a legislative contract (or charter) with the state or jurisdiction" (p. 1). Though the school is public, it is also private. The charter learning opportunities are autonomous. The charter schools cannot charge tuition. Equally, they are exempt from some traditional Local Education Agencies' rules and regulations in exchange for agreeing to meet the various accountability standards within each school's charter. The school reviews its charter every three to five years, whereby the group that granted the charter chooses to continue or revoke it depending on the management and/or curriculum guideline findings (NCES, 2016).

According to Tom Clarke and Zane Berge, contributors to the book, *Trends and Issues of Distance Education*, cyber charter schools, or virtual schools, are "any K-12 online learning program offered by an educational organization in which students can earn credit toward graduation or toward promotion to the next grade level" (Visser, Y. & Visser., L., 2012, p. 98).

There is also increased flexibility or individualization with a cyber charter option versus that of a regular charter option because of the online component.

Charters enjoy freedom from a traditional Local Education Agency's (LEA) state-mandated guidelines. Thus, charter schools can tailor their programs and their approach to a single focal point instead of needing to adhere to every student having a certain number of credits toward graduation. Charter schools offer the distinct benefit of flexibility toward individualized and, to some degree, personalized learning opportunities. With some charters, students can set their own schedule based on their individual preference. If a student needs to review a specific point, he or she can review the lesson's content as often as necessary. Technology makes this feature possible. Non-technology related benefits include students not needing to dedicate their entire education to one school or component of the school. For example, if a student chooses to attend a charter school for a few years, he or she can then return to a public school setting at any point.

Though the flexibility is a benefit, it also has the potential for being detrimental. Growing adolescents sometimes do not fare well learning independently and solely via a computer. The unintended consequences of not being a self-motivated student, or having a strong support or guiding individual at home could put a student further behind academically than that of a unified, traditional school setting approach. Likewise, the students lose the opportunity to learn beyond that of a recorded, teacher-led lesson (NCES, 2016).

2.2.2.2 Online/Hybrid Learning

Online or hybrid learning is similar to cyber charter schools in that both provide an alternative form of education for one or more students. However, they can also differ slightly in that the online educational platform could be in real time through a web-based method or without time

and location constraints (Visser et al., 2012). Hybrid learning, a term sometimes known as blended learning, combines traditional face-to-face time with that of online or out-of-class time (University of Washington Buthell, 2017).

Online/hybrid options are important for personalization. Online/hybrid options have the potential to greatly expand students' exposure to curriculum choices and learning experiences that are more relevant and personalized. The benefits parallel those of a typical cyber school option. The additional bonus to online/hybrid options, however, is students have the opportunity to work interactively with their teacher and/or the cohort's students throughout a designated meeting day schedule (Clark, 2008). Similarly, the challenges also parallel those of cyber charter schools. Students need to be self-motivated and demonstrate that they can work independently. Otherwise, they will likely have less time and/or less continuous individualized teacher support to meet the same course expectations (Clark, 2008).

Comprehensively, the school-based individualized learning opportunities make strides toward personalization in several key areas. First, they allow schools to meet the needs of individual learners. Second, these schools have the increased potential for technological access so that students have access to an individualized and differentiated learning environment. However, the underlying concern is there remains a teacher-led approach regardless of the depth in which the school is individualizing and/or differentiating instruction for students.

2.2.3 Student Engagement-Based Initiatives

Motivating and actively engaging students on an individual level are increasingly the prime reasons for education (Toshalis & Nakkula, 2012). Within these motivating and actively engaging concepts, motivating systematic programs developed.

According to Toshalis and Nakkula (2012), “Classrooms, schools, and teacher-student relationships are influenced by a multitude of factors, to say nothing of peer relationships, social contexts, family dynamics, neighborhood conditions, etc.” (p. 3). The individualized learning opportunities begin with identifying what motivates the student. The opportunities then progress to engaging the student before finally having the student achieve individualized success. The learning relationship is one built on trust before motivation and the other factors come into play (Toshalis & Nakkula, 2012). The authors’ research found that there was a shift in motivation research from behaviorism to constructivism. Behaviorism is often associated with extrinsic motivation while constructivism is often associated with intrinsic motivation. The design of education is, in part, to help students learn subject areas and accept social mores imposed by others. Thus, it is critical that educators understand how students might move from compliance to forms of self-regulated cooperation that satisfy both the student and society’s needs. (Toshalis & Nakkula, 2012).

Once the trust and intrinsic motivators are set between a teacher and his or her student, a revolving door of progress transparently develops. The students and teachers feel like they have some control, or autonomy, over how an activity develops and succeeds, and when they feel meaningfully related to those around them, the students develop into being self-determined. The more often self-determining experiences occur, the higher the tendency and more durable the motivation (Toshalis & Nakkula, 2012).

As intrinsic motivation develops, so does engagement (Toshalis & Nakkula, 2012). Engagement comes in four types that build toward individualized, self-regulated learning opportunities. They include academic engagement, behavioral engagement, cognitive engagement and psychological engagement. Academic engagement includes time on task,

problems attempted, and credits earned toward graduation and homework completion. Behavioral engagement centers on attendance, classroom participation, question-posing, question-answering and extracurricular involvement. Cognitive engagement includes self-regulation, learning goals, perceived relevance of schoolwork to future endeavors, and value of the knowledge or to-be-learned skill. Psychological engagement includes feelings of identification or belonging, relationships with teachers and peers, experiences of autonomy (Toshalis & Nakkula, 2012).

The final stage of an individualized motivational and active engagement process is self-regulation. The theory behind self-regulation is to obtain an especially student-centered perspective on the various aspects of engagement. Self-regulation goes beyond the theory behind self-determination. Self-determination in terms of education addresses students' perceptions of their level of independence, competence and understanding and the relationships within a given activity.

Self-regulation theory focuses on what students do to generate and sustain their engagement. Accordingly, the teacher guides what the students do during the lesson that relate to the topic. Self-regulation takes the students' learning process a step further. It requires teachers to become facilitators of student learning versus remaining at the center of it. Self-regulated students are active participants in their own learning. They are goal-directed. Self-regulated students demonstrate control along with responsibility for their personalized focus and effort when engaged in a learning activity (Toshalis & Nakkula, 2012). Simply put, the transition between a teacher-led lesson with self-determination opportunities through differentiated instruction and/or individualization, and a student-centered learning opportunity occurs at the students' self-regulation stage, or through their personalized learning opportunities.

Within and beyond the classroom level, there are ongoing educational shifts toward individualized learning opportunities that are motivating and preparing students for success during their grades K-12 experiences then beyond graduation. Success beyond graduation is important on an individual student basis. However, individual success helps schools identify the effectiveness of their action plan for students and ultimately the global economy (Smith, 2012).

In all three specific individualized learning initiatives, there remain challenges. However, a potential difference maker for all schools is the increased influence and accessibility to technology. Several technological advances make it easier to develop and monitor education plans for dozens of students at the same time, yet allow each learner to customize his or her individual plan during each school day. To what extent technology ultimately makes education truly personalized in its approach remains unknown. Regardless, the extent to which technology is helping education offset the challenges of individualized learning initiatives and transition into a personalized, customized learning opportunity for each student continues to develop.

2.3 HOW PERSONALIZED LEARNING AND "MASS CUSTOMIZED LEARNING" APPROACHES ADDRESS INDIVIDUALIZED LEARNING CHALLENGES

Schwahn and McGarvey (2012) define "Mass Customization" as, "the capacity to routinely customize products and services to meet the specific needs and/or desires of individuals without adding significantly to the cost of the product or service" (p. 20). In terms of education, the process centers around the products and services of the learner in the classroom and school overall. This educational process parallels the United States Department of Education's National

Educational Technology Plan, or NETP's definition of personalized learning. According to the NETP (2016), personalized learning occurs as:

> Instruction in which the pace of learning and the instructional approach are optimized for the needs of each learner. Learning objectives, instructional approaches, and instructional content (and its sequencing) all may vary based on learner needs. In addition, learning activities are meaningful and relevant to learners, driven by their interests, and often self-initiated (para. 5).

From 2001, there have been many changes to the ways and means for American education. The shift from a "one-size-fits-all" approach into an individualized approach continues to develop. Similarly, the shift from individualized learning opportunities to personalized or "Mass Customized" learning opportunities are transforming education to meet the needs of what each learner needs to be successful. The foundation across various transitions is technology. Even so, almost two decades into the 21st century, educators still have few resources for which they can explore the key components of this emerging educational approach (Toshalis & Nakkula, 2012). Similar to the benefits and challenges of a traditional, uniform approach, the benefits and challenges of an individualized approach become apparent over time.

2.3.1 Individualized Learning

Individualized learning has benefits and challenges in instructional-based, school-based and motivational, active engagement-based approaches. Each approach uses data collection as the basis for individualizing learning. There are three main benefits associated with data. First, a

teacher may use data to identify individual students' proficiencies and/or deficiencies. Second, using data, the teacher can plan for and then implement a lesson or unit that is engaging, motivating, and institutionally established. Finally, the teacher can then refine future lessons based on the individualized data results, students' interests and school-based guidelines (Warlick, 2013).

The greatest challenges that remain regarding individualized education include the learner's continued dependency on his or her teachers, the teacher's available or unavailable resources, including but not limited to technological resources, and the designated learning standards set forth at the school and/or state levels (Warlick, 2013). Despite the challenges of an individualized learning approach, the underlying concept is that there continues to be progress toward education that begins and ends with the learner versus the individual learner's needs. This is in association with the teacher-centered expectations of the school and/or teacher.

2.3.2 Personalized Learning Principles and Overview

McClaskey and Bray (2016) explain that the main difference between personalized learning and individualized learning is the approach. Individualized learning, or individualization, is teacher-centered. Conversely, personalized learning, or personalization, is learner-centered.

Differentiation and individualization focus on the teacher's planning and implementation guidelines for the learner. However, with personalization, the learner-centered approach has many key traits such as the learner's active voice and participation in the design of learning with different, personalized objectives. These objectives connect with the learner's interests, passions and aspirations. Facilitating factors of the objectives include necessary and appropriate levels of technology usage and peer-collaboration, along with teacher or other individuals' guidance that

supports the learning. Assessments occur as learning happens. The key to assessments is to reach mastery level versus completion. Lastly, the teacher's role is to develop a capacity for independent learning by allowing the individual learner to set personalized goals, progress toward these goals and then self-reflect (McClaskey & Bray, 2016).

Toshalis and Nakkula (2012) contend that self-regulation theory is the final of four stages in which the learning process and student engagement develops into personalized learning. More so than the observation, emulation, and self-control, (the first three respective stages toward personalized learning), self-regulation is concerned with "what students do to generate and sustain their engagement" (Toshalis & Nakkula, 2012, p. 18). In accordance with a self-regulated, personalized learning approach, students recognize that they are active participants in their learning. Learners have self-establishing, goal-directed control over and responsibility over their focus and effort amid personalized learning opportunities (Toshalis & Nakkula, 2012).

While the student is self-regulating his or her learning, the teacher is facilitating the personalized learning of the student instead of leading his/her learning. Teachers acknowledge that self-regulated learners tend to be self-starters who show effort and persistence during learning (McClaskey & Bray, 2016). However, through the teacher's facilitation of learning, the student still follows his or her individualized path because self-regulated learners are capable of monitoring the effectiveness of their learning strategies and reacting to what they notice by changing their behavior (Toshalis & Nakkula, 2012).

While the Self-Regulating Theory focuses on more of an individual approach to personalized learning, the American Institutes for Research, or AIR, focused on personalized learning environments as a major contributor to personalized learning. Through the U.S. Department of Education's initiative (2015), Race-to-the-Top-District (RTT-D) Grant Program,

AIR identified four main personalized learning environments associated with the key look-for initiatives of a school applying for the federally funded grant and the personalized learning environment. The four specific learning activities included creating and implementing blended learning environments, developing and using individualized college and career readiness learning plans, implementing competency-based models to support and accelerate students' progress through their learning plans and engaging and empowering key stakeholder groups. The stakeholders specifically includes teachers, parents, and the broader community in the process toward helping guarantee student success (AIR, 2013). Summarized below are each of the four specific learning environment types.

Blended learning environments combine face-to-face, online, and digital instruction to create instructional environments. They "use the physical classroom as only one of many locations and opportunities to learn, thereby potentially opening new possibilities for engaging students in content that meets their skill development needs but also addressing diverse learning styles and allowing room for students to dig deeper into areas of particular interest" (AIR, 2013, p. 3). In other words, the school itself is almost as virtual as it is physically there.

For creating and using individualized college and career readiness learning plans, each student develops a personalized learning pathway. Equally, the pathway is a collaborative effort involving teachers, parents, school counselors, as well as the individual student. For example, dual enrollment and specialized curricula offer personalized learning opportunities for students that are useful to them after they graduate from high school. Dual enrollment opportunities are learning opportunities in which students enrolled in college-level courses along with a school's curricular offerings. Dual enrollment provides advanced options for students who are ready academically beyond certain high school curricula offerings. Personalized learning pathways

also offer an alternative learning opportunity in alternative environments for students who have become disengaged from the traditional high school setting (AIR, 2013).

Specialized curricula such as specific courses or career pathways related course loads offer personalized solutions for individual students. For example, there are integrations of Science, Technology, Engineering, and Mathematics (STEM)-related content and skills throughout the K–12 curriculum. Another example is project-based learning. This specialized curricular example provides students with "authentic learning experiences that support the development of skills attractive to employers, such as teamwork, problem solving, and communication" (AIR, 2013, p. 8). Although project-based learning activities are now relatively common to some degree in most classrooms across America, students still have a more intensive and personalized opportunity to collaborate on real-world, relevant problems.

AIR's (2013) third personalized learning environment is a competency-based mastery system. In a competency-based or personal mastery system, the design of the courses meet the pace of the time necessary for the individual student to master the necessary content in lieu of a generalized, average student projected pace. For example, with a personal mastery system, seat time does not determine whether a student has mastered content. Rather, it is a student's progression pace for gaining the necessary competencies of the activities and learning tasks.

Competency-based models help stop the pattern of struggling students passing through content and grade levels by virtue of sitting through a course due to the time-based decisions for activities. Competency-based models instead help struggling students through additional time to access texts, online or digital lessons, or other instructional programs that reinforce the content and skills under study. All are examples that help promote the necessary time for students to become proficient and prepared for the next instructional levels. In the case of advanced

students, there would be opportunities such as exploring a topic of study in greater depth, through various multimedia resources or through flexible enrollment options that allow them to take classes at a higher-grade level (AIR, 2013).

"Key Stakeholder Groups" include the teachers, the parents and the broader community. All three groups work together to ensure support for students during and beyond the school day. In the case of staff members, the professional development approach for teachers mirrors that of the underlying principles for personalizing student learning. Personalized professional development would maximize the staff's professional learning needs by way of a personalized learning coach, instructional coach, and/or possibly a technology coach. Regarding parents, the focus is on building parental capacity to work with the school through available resources, knowledge and skills to help their children learn. Finally, the greater community plays a major role in supporting students' learning opportunities through partnerships that are multiple and comprehensive in nature (AIR, 2013).

The theories behind personalized learning opportunities emphasize that every aspect of the learning process, such as self-regulation, centers on the learner actively learning at his or her level. Every part of a personalized plan, such as a blended learning environment, college and career readiness learning opportunities, competency-based approaches and complete-encompassing stakeholder groups, also focus on the student as an individual with his or her current levels and opportunities. One way to align all the moving parts toward a personalized learning opportunity efficiently and effectively is through technology.

2.4 TECHNOLOGY'S INFLUENCE ON A PERSONALIZED LEARNING APPROACH

One constant in today's society is the association with and apparent need for technology. Though advances in society are not new because of technology, advances in technology continue to develop and shape our society at an extremely fast rate. However, technology usage in society to personalize many aspects of an individual's life either trumps or parallels opportunities afforded to students' personalized learning opportunities in school. As with society in general, there are technological advancements available for schools that help influence opportunities for students. However, there are also challenges that schools may face when considering technological advances associated with personalized learning opportunities.

2.4.1 Technological Advances

Since the start of the 21st Century, several customized, personalized capabilities have made life more accessible and transformed society from the "Industrial Age" to one of an "Information Age." What used to be an organization-first focused mindset is now customer or client-first mindset (Schwahn & McGarvey, 2012). Prior to the 2000s, there was one-way communication and broadcasting that served as the main means of informing. Now it is consistently more two-way dialogue with blogging, social media and other forms of communication. Smartphones greatly helped this modified communication approach but it remained a shift in mindset over what was the norm in the past. These examples serve under the overarching concept of "Transformational Technology," or using technological advances to personalize opportunities for the consumer and to empower the individual versus the industry (Schwahn & McGarvey, 2012).

The Transformational Technology concept helped evolve several organizations into world industry leaders. One example is Apple, Inc., although, originally a computer-based organization, Apple, Inc. expanded to other areas of electronic advancement such as the music industry. In the process, they reinvented how society listens to music and communicates socially. Instead of compact discs as the advanced means for listening to music, iTunes and digital music now serve as a more personalized, empowering opportunity for the individual. Another example is the online megastore, Amazon.com. With Amazon, an individual can access virtually any product from his or her computer at any time of day, every day including holidays, by merely logging into the website then accessing one's account. The correlation between Apple, Inc. and Amazon.com is that they use technology to personalize and enhance the experience for the individual consumer. Through the technology and the transformational mindset shift, the individual is in control of virtually all aspects of his or her interests, time, efforts and results (Schwahn & McGarvey, 2012).

2.4.2 Technology-Based Personalized Learning Opportunities

Technology-based personalized learning opportunities continue to build momentum within our school systems. Personalized learning opportunities aided by technology can take many forms. At its simplest form, technology usage customizes a presentation of information. At its most personalized approach, however, technology helps a learner completely adapt the learning experience and content delivery based on the individual's performance (Bulger, 2016). With this range of technological offerings in mind, five specific types of learning systems develop and thus serve as a product of personalized learning. The responsiveness of the learner and, with some

categories, the level of adaptiveness, identify the common dividing point between the various types.

Bulger (2016) believes that the five levels of systems include Customized Learning Interface, Learning Management, Data-Driven, Adaptive Learning and Intelligent Tutor. The first three levels, Customized Learning Interfaces through Data-Driven Measures, are "Responsive Systems" related. The last two levels, Adaptive Learning and Intelligent Tutor, transition into "Adaptive Systems" measures toward personalized learning. With a Customized Learning Interface, the lowest level of using technology to personalize learning, a student uses a pre-set, software program to tailor the look of the interface to his or her personal preferences. For example, self-selecting the background colors, the avatars and possibly the screen's interface. This personalized learning approach helps increase student's interests the educational opportunity, but goes no further to personalize learning as there are set selection options and the learning opportunities remain the same.

The second Responsive Systems level is Learning Management. Learning Management uses educational platforms to personalize experiences for students. As the term states, the system works for teachers by enabling them to manage all aspects of communication to students, the school and to parents. Universities and, to a lesser degree school districts, use Learning Management to aide in course selections, supplemental support within the courses along with the maintenance of open lines of communication to or from staff and students. Examples of Learning Management software include Blackboard, Schoology and Class Dojo. Overall, Learning Management systems help personalize learning in terms of tracking, organizing and communicating expectations or other valuable information. Students can choose their own path through the pre-set educational material. Therefore, it is a more personalized as a responsive

system than a Customized Learning Interface. However, this response system does not tailor education based on student competencies or on particular content as much as the third level of response system, Data-Driven learning (Bulger, 2016).

Data-Driven learning is a management system that focuses on specific data points' collection, and then provides materials and resources appropriate to a student's proficiency level. Traditionally, proficiency assessments determine the instructional needs. With the aid of technology, the assessments personalize further in efficiency and student needs measures as they help to identify recommendations for individualized instruction. As data-driven platforms analyze set data points including assessment proficiency level, grade level, and the number of test intervals, the management system develops a recommendation for a specific instructional plan. Then, using the same data points for future assessment components, the student could advance to the next learning level depending on the data results. Progress reports traditionally communicate the data results to students, teachers, parents and the school's leaders. Teachers can use the results to tailor instructional interventions on particular learning tasks for students on an individual or group basis. Parents can use the reports as recommendations to aid their child's progress at home through supplemental practice via software provided online through the school system with access codes or programs such as Rosetta Stone or the Khan Academy (Bulger, 2016). Regardless of the software system used in school or available for reference at home, students receive individual results and guidance for actions to help aid proficiency. Therefore, the characteristics of Data-Driven learning becomes the most responsive to individual learning needs of the three response systems. However, it falls short of adapting students' learning opportunities in the manner that adaptive systems do.

Whereas the Data-Driven learning process stops at identifying the results of the individual student's data and therefore is responsive in nature, the Adaptive Learning component from the overarching Adaptive Systems concept uses software to aide in promoting a student's individual learning proficiency based on the student's data results (Bulger, 2016). Brusilovsky (2003) identifies that though Adaptive Learning Systems concepts began developing as early as the 1970's, their concentrated educational focus is increasingly relevant as technology infiltration within society increases. Today, both business training and education increasingly use Adaptive Learning approaches because the software capabilities transition the individual learner from a passive participant to the collaborator among the educational process. The approach behind Adaptive Learning comes in the form of desktop computer applications, web applications, and curricula. Regardless of the technology-based means for individualizing learning opportunities, the software helps personalize learning by adapting the learning based on the individual's learning behaviors and competencies (Bulger, 2016, Brusilovsky, 2013).

The second Adaptive Systems level, Intelligent Tutor, builds upon the Adaptive Learning approach by stimulating questions, interactions and thoughts based on the individual learner's emotions and interests once there are established behaviors and competencies. Intelligent Tutor-based Adaptive Systems extend learning beyond a technological assistant to that of a proactive learning guide. Though Intelligent Tutor opportunities are currently in development, as technology capabilities and software continue to develop, the potential for technologically centered personalized learning opportunities transition closer to reality (Bulger, 2016).

One aspect of education, however, seems certain. Technology-based education continues to develop at accelerated levels as we move into the future. To what extent technology develops, personalized education is still to-be-determined. However, there remain potential challenges

associated with technology-assisted personalized learning opportunities whether they are Responsive Systems or Adaptive Systems-based.

2.4.3 Potential Technological Challenges to Personalized Learning

Although society continues to see rapidly changing and increased personalized opportunities, the same mindset does not necessarily parallel American education. Several challenges to technology-based personalized learning exist in terms of ethics and equal opportunities for all students within every school system.

The overarching goal of personalized learning is to put the student at the center of his or her learning (McClaskey & Bray, 2016). Technology is an imperative part of this process. However, the extent that learning becomes technology-based and personalized potentially becomes an ethical issue. Bulger (2016) researched the concept of technology eventually replacing teachers and the associated unintended consequences when technology would be the basis for students' personalized learning. In terms of eventual teacher replacement, the author's research found that no evidence clearly existed that artificial learning systems could consistently maximize learning opportunities in part due to concerns with sustainability and affordability (Bulger, 2016). Equally, teachers with a deep knowledge of the curriculum and a strong understanding of how each of their students best learn factored into the continued need for human instructors. The tipping point, however, continues to center on how teachers use the technological opportunities to engage learners versus using the software as a substitute for engagement. Overall, however, personalized learning systems remain at their best for students as supplements to teachers versus serving as a replacement (Bulger, 2016).

Similarly, how a student would feel socially and emotionally contribute to how far technology could independently instruct students and are factors worth considering. For example, Bulger's (2016) research of various studies identified that student learning would be adversely affected emotionally if achievement perceptions did not match the results. Students would view themselves as failures and therefore not be in favor with the expectations set forth by their teachers and/or parents. Additionally, personalized learning strictly through technology-based means cannot provide social contributions such as collaboration opportunities, self-regulation, or self-determination. Therefore, it removes choice and agency components toward a personalized learning approach (Bulger, 2016).

There are concerns with how to use the compiled data toward technology-based personalized learning, with whom to share it, and why the data is collected become bigger issues (Bulger, 2016). Therefore, from an ethical standpoint, these opportunities still need directly associated teachers and collaborative opportunities for technology-based personalized learning. This would help control and actively monitor the access to and reasons for the associated data collection.

Another potential ethical challenge to technology-based personalized learning include solid evidence that the purpose is truly for maximizing individual student learning. Bulger (2016) questions whether schools may attempt to personalize learning opportunities for the purposes of improving standards-based assessment scores along with creating the intended educational approach. Equally, the degree that personalized learning systems differentiate between interim goals such as testing to identify mastery and, to a larger scale, progress to the next grade level or opportunity still remains relatively unclear. Part of the reason may be because of the newness of the technological advances and the development of the concept.

Regardless, as personalized learning develops into its theoretically intended actions and results for every student, the answers to the challenges associated with the technology-based guidelines should also develop from potential to reality.

2.5 MASS CUSTOMIZED LEARNING'S PERSONALIZED LEARNING APPROACH

Recall that Schwahn and McGarvey (2012) define Mass Customization as, "the capacity to routinely customize products and services to meet the specific needs and/or desires of individuals without adding significantly to the cost of the product or service" (p. 20). The concept behind this approach involves the ongoing developments in technology capabilities coupled with the shift from the Industrial Age services to the Information Age services. It is now all about the consumer in society in large part because there has been cross-industry learning that continues to occur. Schwahn and McGarvey (2012) believe that "Mass Customized Learning" (MCL) is a "logical and rational way to significantly change education" despite it is an outside-of-the-box concept with the traditional approach to school systems (p. 32).

Despite the different approach, the authors firmly believe that MCL establishes a new aspect of a personalized learning opportunity due in large part to the details associated with its process. They believe that with today's proven Transformational Technologies firmly in place, there should not be a reason why learning, the learners and learning systems could not follow accordingly. Within the MCL personalized learning approach, several key aspects theoretically form the basis for this mindset (Dweck, 2006) shift for education beyond individualization. These key aspects therefore take a personalized learning opportunity in education to a new, more

applicable level. Similar to the potential technological challenges to personalized learning mentioned in the previous section, there are risks, questions and concerns about sustainability of a MCL approach to education. However, before determining the level of sustainability for MCL, it is important to know its benefits and technology usage.

2.5.1 The Purpose and Background Behind Mass Customized Learning

The purpose of MCL is to focus on the learner, traditionally known as the student, in every way possible. The school system systematically creates a curriculum and instructional approach that helps guarantee that the learner completes high school with the essential knowledge, requisite skills and attitudes to succeed in a global economy (Schwahn & McGarvey, 2012). This requires the school system to have a "Strategic Design" or overarching big picture that will guide an organization's instructional approach. When forming a Strategic Design, the planners, or leaders, need to self-assess essential questions about their current school purpose or process. Then, they self-reflect about where the system needs to be to compete in a quickly changing, forward-thinking world. It also requires the leaders of the school system to then apply their findings for what will work in the future and be prepared to make changes where and when necessary that will translate into meaningful learning opportunities for its learners (Schwahn & Spady, 2010; Dweck, 2006).

The Strategic Design requires both a "strategic direction" that includes the organization's core values and mission and the "strategic alignment" or the associated policies, process and organizational structure. The school leadership is critical to the transformational changes within MCL. Equally, specific types of leadership develop from both the strategic direction and the strategic alignment. With this in mind, MCL identifies five leadership domains that collectively

form the leadership components of the overall Strategic Design. They include authentic leaders, visionary leaders, relational leaders, quality leaders and service leaders. The strategic direction aspect of the Strategic Design requires authentic leaders and visionary leaders. First, the authentic leaders help the organization to create a compelling organization purpose. They are the reason for the necessary changes. Next, the visionary leaders solidly describe the organization's vision and help create the picture of the changes. Third, the relational leaders help ensure that all are involved in the change process by maintaining the commitment to making the necessary changes. Fourth, quality leaders develop and empower all stakeholders therefore allowing for the capacity to change. Lastly, service leaders manage the vision by continuously supporting the change. The strategic alignment aspect of the Strategic Design requires quality leaders and Service Leaders. The relational leaders provide the link between the strategic direction and the strategic alignment within the Strategic Design. All are of equal and essential importance regardless of which aspect they may be. Without each working effectively, MCL cannot occur. (Schwahn & Spady, 2010).

Schwahn and McGarvey (2012) also emphasize that within the various aspects of each leader's roles, there needs to be a Strategic Design versus a traditional strategic plan. Within a traditional strategic plan, the overarching goal is to improve student outcomes while responding to changing demographics and remaining within the district's budgetary capabilities (Billingham, 2012). Instead, with a Strategic Design, Schwahn and McGarvey (2012) believe that it must be learner centered, future focused and associated with the best research regarding students and learning. As the district leaders begin to identify what a learner centered, future focused approach will look, essential questions that require concrete answers develop. Questions such as to what degree school systems are preparing its learners for a successful adulthood in which they

can independently thrive. Equally, do school systems have the capacity and willingness to analyze, clarify and lead the learner outcomes to the extent that these outcomes drive all curriculum and instructional decisions? Are there frameworks in place to enable the learner to be the center of the learning and will additional infrastructure requirements need installed? Beyond the local educational level, where do the Common Core Standards or other associated state standards fit within the context of preparing learners for lifelong success? Though some of or perhaps all of the questions may be difficult to answer initially, each essential question guides a school system to first identify the specific needs of a Strategic Design, then begin the process of tailoring these needs to each learner. From these essential questions, and the associated learner centered and future focused mindset within a district's Strategic Design, the district's mission and vision form (Schwahn & McGarvey, 2012).

2.5.2 Mass Customized Learning Vision and Mission

An organization's vision and mission statements should work together to meet the intended goals and objectives. However, the concepts are often confused regarding their intentions. Whereas an organization's mission statement focuses on the critical and present levels of a desired performance, the vision statement focuses on the future as inspiration for what the organization wants to become and how it wants to help shape the industry for the better (Diffen.com, 2016). Similarly, with education, a school system's mission is about its purpose and goals. A school's vision statement must be well ahead of the organization's current capacity to operate and instead provide what it will look like when it is operating at its best (Schwahn & McGarvey, 2014; Schwahn & McGarvey, 2012). Both the mission statement and the vision statement provide clarity for the leaders of the school system, as well as all associated with the school in the present

and the future. In the case of a district's vision, it must be concrete enough that everyone knows how the vision will affect him or her on a daily basis. It makes the mission worthwhile even if the vision seems well beyond one's reach currently (Schwahn & McGarvey, 2012; Dweck, 2006).

Schwahn and McGarvey (2012) explain that school districts and schools must transform their thinking if the Mass Customized Learning (MCL) vision would become a reality. Therefore, instead of referring to the school system as a school district, it is a "Learning Community." Equally, schools are "Learning Centers." Learning Communities and Learning Centers, go beyond changing names by instilling five key traits in association with its vision. A Learning Community or Learning Center's vision is describable, desirable, doable, directing and detailed. This vision is describable in the sense that it is clear, concrete and easily communicated. It is desirable because it provides excitement for what is to come. The vision is worth the risks associated and therefore doable. It is directing in terms of focusing on the individual and the organization. Lastly, it must be detailed to the extent that everyone fully realizes how it will influence the system overall (Schwahn & McGarvey, 2012).

Once the vision is established, then the mission of the school can also develop. With MCL, the basis for a mission centers on function and form, with form following function. The concept of function is the mindset that students or learners learn in different ways and within different timeframes. The concept of form focuses on everything that the leaders and adults of the school system do and how they do it toward accommodating the functions. Form could mean how the teachers, instead known as facilitators as per MCL, teach the learners. Form also refers to how the facilitators assess the learners, provide feedback for or to the learners, how the leaders and facilitators structure the organization and otherwise (Schwahn & McGarvey, 2012).

In this aspect, the thoughts of Schwahn and McGarvey (2012) associated with Function parallel Self-Regulation Theory by Toshalis and Nakkula, (2012). In addition, one could argue that the Form concepts explained by Schwahn and McGarvey (2012) parallel those of AIR (2013) in terms of personalized learning approaches. Overall, the basis for any aspect of a personalized learning approach, including MCL, includes a transition from facilitators and leaders controlling all aspects to one of supporting all aspects of learning. How this looks in personalized learning varies to some degree.

Though the overall goal of the will to learn remains the same from a control-based approach and a support-based approach, other associated factors separate the two approaches. For example, motivators from adults in control focus on extrinsic rewards and punishments whereas adults with a support focus use choice, challenge and competence as options. The essential question transitions from how one person motivates the learners, the staff and the community to how can there be conditions set in place that provide self-motivation for learners, facilitators and the community (Schwahn & McGarvey, 2012; Dweck, 2006). Manipulation transitions into support for achieving goals. Instead of potentially creating a culture of alienation associated with defiance or compliance, there becomes a culture of a sense of well-being associated with independence, creativity and self-actualization. The result, in theory, is that a school's success in its mission is therefore sustainable instead of undermining in a support-based approach versus a control-based approach (Schwahn & McGarvey, 2012).

2.5.3 Shifts from Traditional Learning toward Mass Customized Learning

Despite the intentions of school systems to personalize learning, there still largely remains a traditional, Industrial Age, approach to education. There continues to be strides made toward

differentiated instruction along with individualized educational approaches. However, despite technological advancements in society that personalize opportunities for individuals and amid the continuously developing technological advancements, the pace for which personalized opportunities transfer a school system's Strategic Design remain inconsistent. (Schwahn & Spady, 2010). Schwahn and McGarvey (2012) agree. They too believe that continuing a traditional, one-size-fits all or a teacher-centered approach to education will continue to prevent true personalized learning from occurring for the learner. The authors cite specific aspects of traditional approaches to education, for which they refer to as "Weight Bearing Walls," that continue to hinder progress toward personalized and Mass Customized Learning (MCL) opportunities. Individually and collectively, the Weight Bearing Walls prevent teachers from transitioning into facilitators while also preventing students from transitioning into learners. The Weight Bearing Wall examples include a nine-month school calendar, grade levels, students assigned to classrooms, class periods with specific timeframes for learning opportunities, courses associated with a set curriculum, textbooks, report cards that identify an A-F grading system and a designated learning opportunity in school alone. The following information details how specific examples of weight bearing walls continue to hinder personalized learning along with how technology could play a role in moving education forward and within the ideals of a personalized learning opportunity (Schwahn & McGarvey, 2012).

School systems designate a school calendar for which all aspects of teaching and learning must occur within one school year. The school calendar is traditionally a nine-month timeframe. This preset timeframe allows those in school along with those at home to know when school would be in session versus not and then plan accordingly for events such as vacations or when children could provide additional assistance at home. The problem with a nine-month school

year is the great potential for learning regression versus a continuous learning process to occur over the three-month summer vacation period between grade levels. In the case of grade levels, students can be easily grouped and then progress through a twelve-year academic progressive cycle.

However, the traditional grade level alignment for all students adversely affects students' abilities to maximize their learning potential. Similarly, on a daily versus annual basis, class periods and a bell schedule help align where people will be at what time. It also helps align what lessons along with how and when. Yet, the unified alignment also potentially prevents the teachers and students from completing the necessary curriculum within a course amid the unified time and schedule (Schwahn & McGarvey, 2012).

In association with schedule are student assignments to classrooms. The benefit for the teachers and students is that enrollment numbers are balanced. Equally, the student-groups are manageable during the class period. There are multiple detriments to this approach. The learning needs groupings do not necessarily align individual students with a teacher with a master skillset and the groupings are not necessarily based on the student's similar learning needs to master a specific learner outcome (Marzano, 2010). With unified courses and curriculum, the teachers and students know what will need covered and within the quarterly based, semester-based, and/or school year-based timeframes for which learning can occur. However, this arrangement also potentially adversely affects the students from progressing through the curriculum and course overall at a non-predetermined pace and direction (Schwahn & McGarvey, 2012).

Traditional implementation approaches within the curriculum and courses include a heavy emphasis on textbook use along with using paper and pencil formatting to document

information. Textbooks provide generally dependable content within the curriculum that more easily allows the teacher and student to identify what chunk of information would need covered within the preset timeframe. In many cases, they can be of varying ability levels to help with individualization. However, textbooks do not adhere to the needs and interests of the learner because of their necessary brevity. Paper and pencil formatting provides proof of achievement and performance. However, it also potentially develops into an antiquated means for continuous learning based on individual needs and within necessary timeframe limitations (Schwahn & McGarvey, 2012).

Additionally, the location of learning and the report cards remain Weight Bearing Walls. When learning only occurs in schools, the school system can actively monitor when, how and where learning occurs. However, this mindset also limits the possibilities for learning to extend into community-based resources, internet-based resources and learning in real-life contexts. Similarly, report cards provide a means for communication with parents or guardians regarding a student's achievement in school. However, they are traditionally only sent home at nine-week intervals and therefore remain insufficient communication means in association with the real-time, ongoing learning opportunities within schools. Lastly, when parents or guardians receive the report cards, they traditionally have a grade rating of A-F. This arrangement allows school systems to more easily identify class rank and general student progress within a course and school overall. However, it also remains very general in identifying the details of what exactly a student learned to earn the associated letter grade and collectively a student's class rank (Schwahn & McGarvey, 2012).

Each Weight Bearing Wall shares a common theme. Each focuses on past and, to some degree, present educational practices. If they do not adhere to a one-size-fits-all approach then

they remain at best individualized versus personalized approaches to education. However, with continuously developing technological advances continue to break down traditional Weight Bearing Walls. With these advancements, technological advancements make learning opportunities electronically based and instantly adaptable and available nonstop, throughout the year. For example, Google.com provides free access to software that allows a wide variety of personalized learning opportunities. These opportunities include, but are not limited to, electronically based calendaring, documents, spreadsheets, presentations, contacts and classroom cohorts. There are also links to associated personalized learning and production opportunities (Google.com, 2017). There are others beyond Google.com that help with personalizing educational opportunities too.

Apple and Khan Academy greatly challenge the traditional educational structures. These two organizations in particular challenge the Weight Bearing Walls associated with courses and curriculum, with students assigned to classrooms, with learning only occurring within designated school buildings while during specific class periods within a bell schedule of a grade level. Apple Inc., created "iTunes U" in which individuals, groups and/or organizations can receive support from the education department of Apple Inc. to learn about topics, information or overall courses. All of the offerings are available at one's convenience at any time and on any day (Apple.com, 2017). The Khan Academy provides online learning opportunities for students, teachers and parents. The content ranges from specific information associated with a topic or concept to a complete course resource (Khan Academy, 2017). Similar to Google and Apple, one only needs to create an account. Also similar to Google but different from Apple, there is not an initial cost for membership nor continued access fees (Apple.com, 2017, Google.com, 2017, Khan Academy, 2017). Other online websites, search engines and education-based

organizations also provide varying degrees of immediate, current and ongoing access to information via technology.

Although, one could argue the degree to which technology-based learning should develop within a school system, technological developments increasingly challenge the traditional, Weight Bearing Wall school system. Implementing these developments increase the potential for outside-of-the-box concept thinking and personalized learning opportunities. All the while, the increased potential for allowing form to follow function associated with the Strategic Design concept for a district should increase too.

2.5.4 Technology's Influence on the Mass Customized Learning Process

The Mass Customized Learning (MCL) philosophy and concepts center on personalized learning opportunities through technology-associated resources. It also focuses on professional development for these resources and other valuable components. Recall that there are several key characteristics associated with personalized learning. Students are learners. The learners have a choice in how they acquire the necessary information and associated knowledge (Dweck, 2006). Everything can be a teachable moment and the learners can become the teachers as easily as it is vice versa. Equally important, because of continuous technological developments, there is an abundant amount of resources available to help remove barriers to learning and instead allow for a flexible, creative learning environment (McClaskey & Bray, 2016).

Schwahn and McGarvey (2012, 2014) claim that MCL builds upon personalized learning by adding the essential characteristic of making learning the constant and time the variable while the learner remains at the center of the process. To explain the theory behind this characteristic, the authors cite a specific, seven-step process critical for school systems to have in place prior to

implementing MCL. As per, Schwahn and McGarvey (2012), a school system ready for MCL implementation: (1) has derived a strategic design; (2) has written curriculum as learner outcomes; (3) has categorized learner outcomes designed by learner format; (4) has created and placed online learner outcomes online; (5) has created seminars for learner outcomes that require an interactive seminar format; (6) has designed and implemented scheduling technology for the individual learners; and (7) and has designed and implemented accountability technology for administration. This process cites specific examples for how MCL would implement a continuously personalized approach with variable timeframes and within learning. Similar to the leadership components of MCL, each aspect of the process is essential and equal individually as well as collectively.

The first step in the process is to build and establish the Strategic Design. Components include a vision, mission or core values, Learning Outcomes and identifying what the organization will look like during its ideal operation. To begin this step, there is first an in-depth study analysis of future trends for students after graduation followed by a continued focus on what is best for each learner in a future-focused, systematic and logical way. Concepts include what is available now, what is likely in the future regarding technology, professional development strategies and professional development-related resources. This step ends initially by using the ideas as the basis for what would help guarantee each learner is ready for post-graduation success (Schwahn & McGarvey, 2012).

The second step in MCL is establishing a written curriculum as "learner outcomes." The learner outcomes associate what Schwahn and McGarvey (2012, 2014) refer to as "enabling outcomes" and "Spheres of Living." Enabling outcomes align specific learning points that the learner must master by the end of the necessary learning opportunity. The Sphere of Living

identifies the specific areas for how people spend their lives. Beyond just learning, there are also areas in one's life that includes personal or individual, relationships, economic, civic, global and cultural aspects.

Technological advances heavily influence Steps 3 through seven. Step Three is when the school system categorizes Learner Outcomes by learning format. The learning format must include a learning schedule that centers on the learner. This requires the flexibility to go beyond the traditional learning approach and instead focus on alternative learning options. The learning schedule must also be flexible enough to adjust if necessary during the process should the first learning alternative not be the best for the learner. Learning alternatives such as online learning, seminars, lab work, projects, mentoring or shadowing and informal learning groups are viable options for learner-centered education. With online learning, the learner solely relies on a computer and the Internet. Seminars, conversely, require learners to work together through interactions, questioning, modeling and practicing. Lab work also requires learners to work together through hands-on experimentation. It is social in nature. Mentoring and shadowing puts learning to use in the real-world settings. Lastly, informal learning groups are for mature, advanced learners who earn the chance to work together amid online learning opportunities. As with previous steps, there needs to be ongoing professional development to help ensure staff are maximizing their opportunities with their learners (Schwahn & McGarvey, 2012).

Step four, in which the school system creates and places online learner outcomes online, builds upon Step 3. To identify the proper forum for personalized learning, a school system must use all necessary and available technology to establish access to its curriculum, instruction, and assessment. As the school system increases its technological capacity, through professional development, the facilitators identify content available online versus face-to-face or other, less

efficient and effective means for education. Then the system will increase its usefulness to the individual learner. The fifth step, when school systems create seminars for Learner Outcomes that require an interactive seminar format and implements the essential, ongoing interactions of learner to teacher and learner-to-learner interactions. Since the overarching purpose of a seminar is to bring learners together with a learning facilitator to learn outcomes in association with various collaborative activities, the seminar must have and communicate all essential components to achieve success (Schwahn & McGarvey, 2012).

The essential components include clear outcomes, descriptions, qualified facilitators, prerequisites, scheduling opportunities, the location and other information pertinent to learner success within the confides of the seminar. The seminar must have outcomes with a clear statement of what learners will demonstrate toward mastery of the learning concept (Marzano, 2010). The seminar description should briefly identify the content, the format and the scheduling structure. The learning facilitators who will conduct the seminars along with a blurb about his, her or their qualifications. Prerequisite information must be available to identify what the learner needs to master prior to an invitation to the seminar. This includes any readings and prerequisite foundational skill work associated with the seminar. The scheduling opportunities identify the number of required classroom hours along with the number of times the seminar will meet throughout the year. The location could be face-to-face or online. In addition, learning coaches, or those who will help guide a learner along his or her instructional path and provide academic and/or behavioral support, must be able to schedule a seminar with the learners regardless of the time or day of the week. Equally, the learner must be able to instantaneously register for seminars, know the status of available seminars and know his or her individual status toward mastery of a seminar. The primary goals of the seminars are twofold. First, they help prepare

the learner for mastery in association with the seminar's content. Second, through mastery of the content, a learner can build his or her electronic portfolio. The learner's electronic portfolio is a collection of the culminating artifacts that demonstrates mastery in each required Learning Outcome throughout his or her educational experience. Finally, the seminars prepare the learners for success throughout their educational experience and pathway beyond their school years. (Schwahn & McGarvey, 2014, Schwahn & McGarvey, 2012).

Step Six is when the school system designs and implements scheduling technology for the individual learners. In short, the school system must have technology available that will make an electronic calendar the uniform point of accessing information regardless of the reason. Whether it would be for general information such as accessing school events or extra-curricular events, an electronic calendar is important. When accessing the Learner Outcomes associated with seminars, or possibly for scheduling purposes, there needs to be an efficient and effective solo starting location to navigate for any learner, parent or guardian (Schwahn & McGarvey, 2012). The final essential element for implementing a system in which learning is the constant and time is the variable is the school system designing and implementing accountability technology for the district's leadership. Operating under the premise that nothing is more important than the safety of a child, the use of technology to identify where a student is at any point greatly assists the administration's responsibility for a safe and productive school environment. Similarly, in terms of academics, there must be technological capabilities set for immediate access by all "need to know" individuals associated with the individual learner's electronic portfolio. This includes the instructional coach, the facilitators, the child's parents, school administrators as well as the learner (Schwahn & McGarvey, 2012).

Two years after Schwahn and McGarvey (2012) published *Inevitable: Mass Customized Learning in the Age of Empowerment*, the Technology-Enabled Personalized Learning Summit occurred in Raleigh, North Carolina on the campus of North Carolina State University. As the Summit's title indicates, the focal points aligned with the overarching thoughts associated with MCL. Interestingly, the Summit's leaders identified five essential elements and five associating measures that policy enablers must do in order for personalized learning to yield desirable results. The first of the five essential elements is flexible, anytime, everywhere learning. The second essential element includes redefining the teacher's role and expanding the "teacher" concept. The third uses project-based, authentic learning. The fourth uses a student-driven learning path. Finally, a focus on mastery and competency-based progression to pace learning. The five measures that need implemented by policy enablers included redefining the use of time in terms of the Carnegie unit and calendars, performance-based time-flexible assessments, equity in access to technology infrastructure, funding models that incentivize completion and a P-20 Continuum in association with a non-age and non-grade band system (Friday Institute for Educational Innovation, 2014).

There are multiple connections between the findings of the Technology-Enabled Personalized Learning Summit's leaders and those of the founders behind the MCL framework. With each essential element identified, there is a leadership component necessary to help ensure the specific element's success. The learner must demonstrate mastery as he or she progresses through his or her personalized learning path. Professional development of staff and the personalized process overall must occur prior to and during implementation. Finally, there is consistently the use of technology to aid in the leader's quest to personalize learning to the highest levels.

2.5.5 Conclusion

Schwahn and McGarvey (2012) emphasize that learning is the constant and time is the variable as Weight Bearing Walls give way to personalized learning opportunities. The main focal point of Mass Customized Learning (MCL) is to empower the individual learner. With ongoing support from facilitators who are experts and use data to inform and aid the learner with his or her personalized learning opportunities, the MCL approach makes learning active, accommodating and forward thinking through available technology within the school system. In these ways, MCL addresses the challenges of individualized learning. The overarching goal with MCL is to prepare students or learners for success in school and after they graduate. With the assistance of technology and in association with leadership structures and aligned student-centered, actively engaging measures, this goal potentially becomes reality. In these ways, MCL adds to the potential successes beyond an individualized learning approach. Instead, it transforms into the realm of personalized learning goals that remain the educational trend of this decade.

2.6 SUMMARY AND NEXT STEPS

The 21st century brought about several modifications in society and American education compared to those of even the latter parts of the 20th Century. In society, technology and customized options became increasingly available for each person. With American education, continued shifts developed. Education advanced from a “one-size-fits-all” approach to more of a

differentiated, then individualized and, in some cases, to a personalized learning opportunity for every student.

Modifications in teacher quality, professional development measures and standards-based assessments enhanced individualized measures based on theory, locations for school-related learning and student engagement. Sequentially, technology-based initiatives continue to be a predominant influence in the shift from individualized learning opportunities to those of personalized learning opportunities. Similarly, technological approaches greatly help support the ideals of a Mass Customized Learning (MCL) process that builds upon students' personalized learning opportunities.

However, after reviewing the literature, there was not as much research regarding technology-associated sustainability measures for MCL as there is on individualized learning, personalized learning and the ideals of MCL. How school systems implement MCL currently and in the long term remains a lesser-chartered research topic.

Through a deeper study and analysis of specific schools implementing with what they perceive as fidelity-based MCL, a deeper understanding developed regarding how or if MCL could be a sustainable student-centered learning school system long term.

3.0 METHODOLOGY

This qualitative study explored how two schools in Pennsylvania implemented what each represented as a Mass Customized Learning (MCL) approach. Through documentation, onsite visits and semi-structured interviews, the study explored how each school aligned with what the founders of MCL identify as full MCL implementation. Six key focus areas provided a conceptual framework for data analysis related to the research questions and perspective despite the study's limitations. The goal of this study was to learn more about MCL planning and implementation in association with the three research questions.

3.1 RESEARCH QUESTIONS

The three specific research questions for this study are the following:

1. What considerations led to the adoption of Mass Customized Learning in the two schools?
2. How is Mass Customized Learning being implemented and evaluated in the two schools?
3. How does the implementation align with the Mass Customized Learning model?

3.2 SELECTION OF PARTICIPANTS

Prior to selecting the participating districts, I became more familiar with the Mass Customized Learning (MCL) organizations and participants nationwide. Below is a summary of the organizations and pertinent information that helped select the district participants, followed by the selected case study participants and then the process for participant recruitment.

3.2.1 MCL Participant and Organization Background

MCL continues to build through the "Mass Customized Learning National Alliance." Within the MCL National Alliance, there are six specific organizations. The organizations include Schwahn Leadership Associates, McGarvey Educational Associates, the Pennsylvania Leadership Development Center (PLDC), the Appalachia Intermediate Unit 08 (AIU8), Technology and Innovation in Education (TIE), and the Maine Cohort for Customized Learning (MCCL). Both the PLDC and the AIU8 are Pennsylvania-based organizations. TIE and Schwahn Leadership Associates are South Dakota-based organizations. MCCL along with McGarvey Educational Associates are located in Maine. Three of the six organizations have partnerships with school districts within the respective organization's state or commonwealth. The three organizations include TIE, MCCL and, most recently, the AIU8. This means that South Dakota, Maine and Pennsylvania each have organizations with school district representation (Mass Customized Learning National Consortium, 2017).

According to the Maine Cohort for Customized Learning (MCCL) webpage (2017), however, there are five states, with at least one district, that have claimed ties to implementing Mass Customized Learning. Along with South Dakota, Maine and Pennsylvania, New

Hampshire and California make the five states as of 2017. New Hampshire has school districts aligned with the MCCL while California has, among other districts that implement Mass Customized Learning, Lindsay Unified School District. The Maine Cohort for Customized Learning has 26 schools/school systems members as of June 2017. Some were members since the organization formally organized in spring of 2011 (Maine Cohort for Customized Learning, 2017). Lindsay Unified is among the beacon districts in MCL books and organizations (Schwahn & McGarvey, 2012).

The Technology and Innovation in Education (TIE) webpage (2017) identifies 158 school districts in three states, South Dakota, North Dakota and Wyoming, as TIE members. The memberships are tiered by student enrollment within each district. The member districts in North Dakota and Wyoming did not claim to have a Mass Customized Learning approach as per their respective district's websites. Rather, they only used TIE resources for professional development. Of the 158 school district members, however, most districts in South Dakota are similar to those of North Dakota and Wyoming in that they only use TIE as a professional development resource, as per their website. However, 19 districts in South Dakota have implemented Mass Customized Learning to varying levels over the past decade, in part with the grant funding supported by the Archibald and Edyth Bush Foundation, as well as the districts' interest and determination to implement Mass Customized Learning (Black Hills Special Services Cooperative, 2017).

Consistent with the TIE and MCCL websites, the Appalachia Intermediate Unit 08 (AIU8) website also promotes a Mass Customized Learning Consortium in their case for Pennsylvania. The Appalachia Intermediate Unit 08 (AIU8) is one of 17 intermediate units throughout the Commonwealth of Pennsylvania. Intermediate Units in Pennsylvania are

regionally located educational service agencies. They assist students through online learning opportunities while assisting schools within their region through professional development services and human resource support (paiu.org, 2017). The AIU8 is responsible for serving four counties of public school districts. There are currently 41 Consortium district members throughout the commonwealth. This number has increased from zero districts in three years' time. Similar to those associated with Technology and Innovation in Education and the Maine Cohort for Customized Learning, of the 41 Mass Customized Learning Consortium member districts, some are further along than others with their MCL consideration of and/or implementation (Appalachia Intermediate Unit 08 Mass Customized Learning Consortium, 2017).

Districts implementing MCL in the five states throughout the United States have a wide variety of demographics that represent the participating schools. Some schools were high achieving prior to the change while others were lower performing. Some school systems were very racially diverse while other systems had a vast majority of white students only. The districts used some form of Transformational Technology, or technology that helped personalize learning for every student. The main differences between the school systems currently, however, is the number of years a school is implementing MCL coupled with where each district is in their respective process of implementation.

3.2.2 Case Study Participants Background

The study's participants met four main criteria. First, both advertised Mass Customized Learning (MCL) implementation on the district's website and on the associating organization that named the school district. Second, both participants promoted MCL schoolwide with the

intention of having a district-wide process in the future. This was a highly important factor because the study looked at next steps regarding growth and sustainability. Third, the participants had demographic diversity to help offset demographic challenges as the primary approach for MCL implementation. Lastly, both districts are located in Pennsylvania and were within a reasonable driving distance for me. These accessibility features were important because of the planning practicality for obtaining data for analysis.

After finding two districts that met these four main factors, I sought approval to research Washington Area School District for its MCL implementation at the elementary level, and Polk Area School District for its MCL implementation at the secondary level. The names of the district participants are pseudonyms for anonymity purposes.

3.2.2.1 School Districts Participants

I received approval to research Lincoln Elementary School (LES) within the Washington Area School District (WASD) and Jefferson High School (JHS) within the Polk Area School District (PASD). WASD is located in northwestern Pennsylvania and is a participant in the Mass Customized Learning Mid-Atlantic Consortium (Mass Customized Learning Mid-Atlantic Consortium, 2017). The Pennsylvania Department of Education's School Performance Profile (2017) identified that Washington Area had 1996 total students in Grades K-12. Fifty-nine percent of its students are considered economically disadvantaged. Of its students, .03% are English Language Learners. Additionally, 93.6% of the students are White while 2.3% are Hispanic/Latino. Asian, Black or African American, American Indian or Alaskan Native and multiple race students constitute the remaining approximately 4.1% of the student population. WASD has three elementary schools, one middle school and one high school. According to the 2015-2018 Comprehensive Plan located on its district website (2017), there are 283 employees,

148 of whom are professional/instructional employees, 118 full or part-time support staff and 17 administrators. LES, in particular, has 225 students and 39 staff members that include one administrator along with 38 professional employees, support staff and non-academic employees.

PASD is located in southcentral Pennsylvania and is a participant in the Mass Customized Learning Mid-Atlantic Consortium (Mass Customized Learning Mid-Atlantic Consortium, 2017). The Pennsylvania Department of Education's School Performance Profile (2017) identified that Polk Area had 5811 total students in Grades K-12. Thirty-three point three percent of its students are considered economically disadvantaged. Of these students, 1.5% are English Language Learners. Additionally, 71.5% of the students enrolled are White while 8.5% are Hispanic/Latino. Black or African American student enrollment percentage is 8.7% while an additional 7% of students enrolled are multiracial. Four percent of all students are Asian and less than one percent are American Indian or Alaskan Native, Native Hawaiian or Pacific Islander. PASD has seven schools within its district. There are five elementary schools. Three elementary schools are for Grades K-3 while two additional elementary schools serve Grades 4-6 students. There is one middle school for Grades 7-8 students and one high school for students in Grades 9-12.

According to the most recent Comprehensive Plan located on its district website (2017), there are over 340 professional/instructional employees, among comparable numbers for support staff and non-academic support personnel. There are 29 administrators, 18 at the building level and an additional 11 in central office. JHS, in particular, has over 1,700 students. Additionally, there are over 160 staff members that include a principal, an associate principal, three assistant principals and 106 professional employees with an additional number of support staff and non-academic employees.

3.2.3 School and Personnel Participant Recruitment

The University of Pittsburgh's Institutional Review Board (IRB) gave permission to proceed collecting data on December 19, 2017. The Washington Area School District (WASD) superintendent of schools then received an email request for contact prior to a conference call on December 27, 2017. At the superintendent's request, the Lincoln Elementary School's (LES) principal also participated in the initial discussion. During the conference call, discussions regarding the full details and goals of the study, along with identification of the other district involved occurred. Then, the superintendent received an email attachment requesting written approval for participation along with all other pertinent templates to begin data collection (see APPENDIX A, APPENDIX B, APPENDIX C and APPENDIX D). Lastly, we agreed on January 12, 2018 during the school day, as the onsite visit date and time.

The same pattern followed for the PASD superintendent of schools after the data collection and analysis concluded at WASD's LES. I sent an email request and received permission for the study from the Polk Area School District Superintendent occurred on January 15, 2018. The superintendent gave permission to contact the point of contact's name, the Jefferson High School (JHS) assistant principal, on January 17, 2018. The assistant principal, serving as the interim principal while the principal was on active military duty leave, received an initial request to contact him via email on January 17, 2018. He replied the same day. As he requested, I called him on January 19. We discussed the background of the qualitative study and coordinated the onsite visit date for JHS for February 6, 2018.

After receiving the written approval templates, documentation collection began. The onsite visit followed and then the interviews. The first interviewee was with the Mass Customized Learning (MCL) point-of-contact and then the other and available district personnel

for each district. Following each interview, I asked those interviewed if there were other recommended adults to interview via the "snowball" sampling technique. The "snowball" sampling technique focuses on a small population of known individuals, or in this case, schools, then expands upon the research of what is typically not a widely known topic. This case study's objectives parallel the "snowball" sampling technique due to the unique nature of MCL and the limited number of schools actively implementing MCL (Crossman, 2017).

Through the recruitment process and with the collaboration among the participants, I obtained sufficient data that contributed to answering the three research questions. In addition, this data and analysis helped determine if MCL, when implemented with fidelity, could be a feasible option for implementation at my district of employment.

3.3 DESCRIPTION OF THE STUDY

This exploratory case study used three means of data collection to identify the six Focused Concept areas and associated data sources. Analysis of the data sources helped further understand how, what and if Mass Customized Learning (MCL) implementation could be sustainable and productive for learners at my own district. The data collection occurred first at Washington Area School District (WASD), with a concentrated focus on Lincoln Elementary School (LES), and then at Polk Area School District (PASD) with a concentrated focus on Jefferson High School (JHS). A sequential approach from LES to JHS occurred for effective and efficient data collection and analysis means.

A learning progression continuum (see Figure 1) helped identify where each artifact, observation and/or interviewee response identified within the six Focused Concept areas (see

Figure 2). The Focused Concepts graphic (see Figure 3) identified on the rubric where each data source aligned during MCL implementation for both schools.

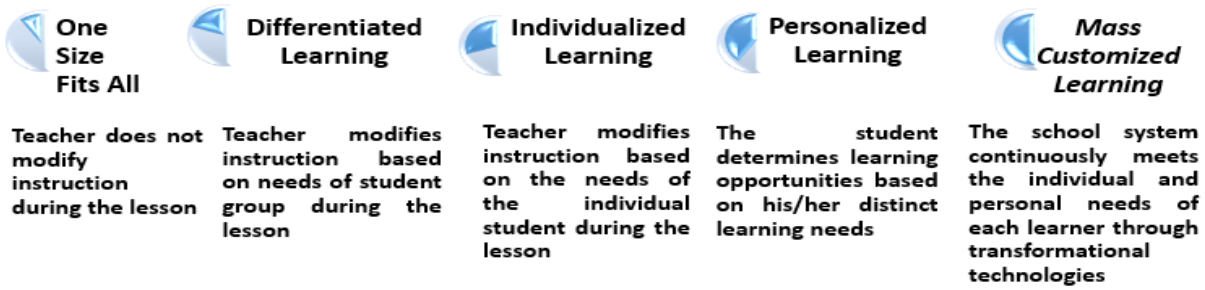

Figure 1. Learning Progressions to Mass Customized Learning (MCL)

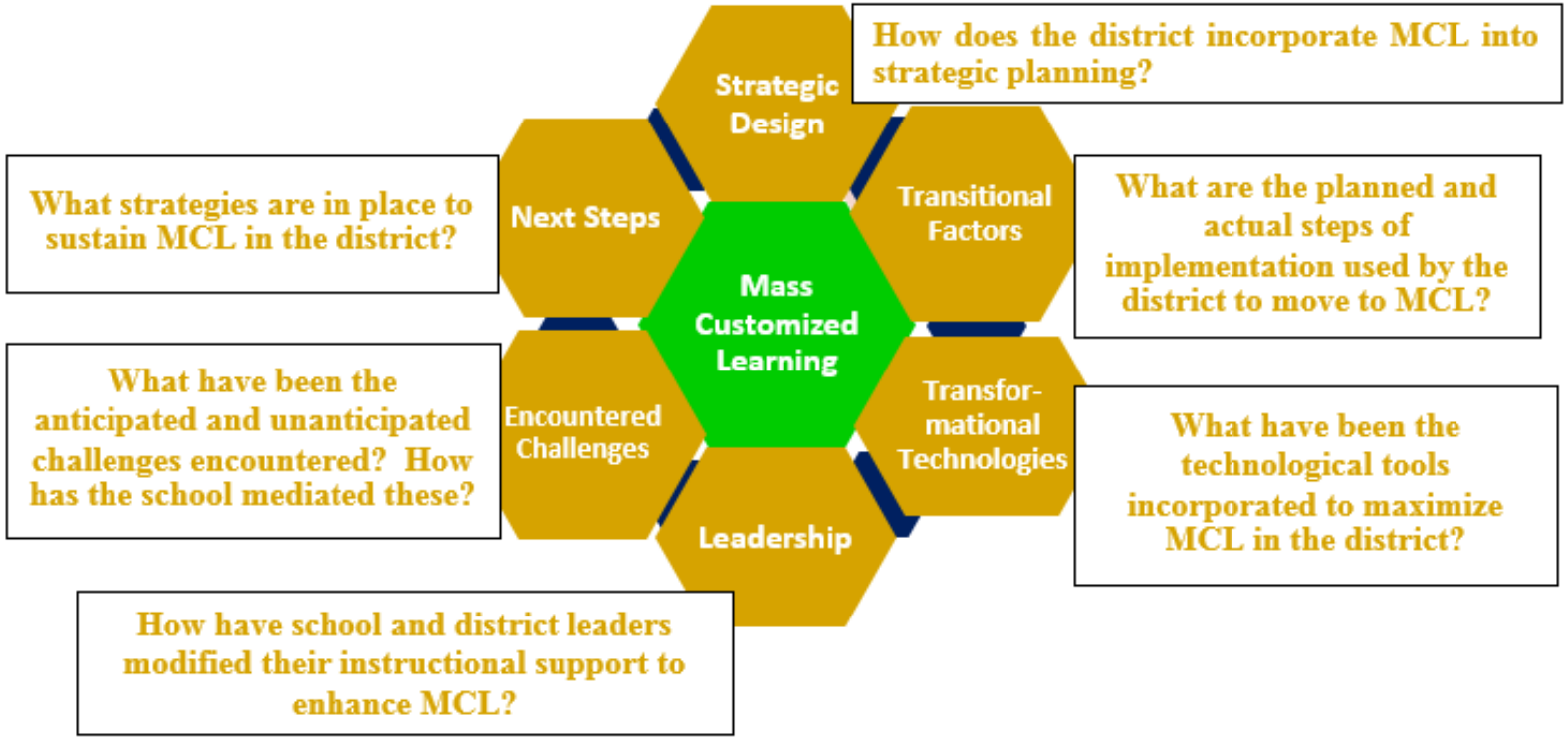

Figure 2. Six Focused Concepts Present in MCL Planning and Implementation

Focused Concepts Graphic

Data Source:_____

"Look For" Continuum

	One Size Fits All	Differentiated Instruction	Individualization	Personalization	Mass Customized Learning
Strategic Design	**The Design features a universal plan for its students and processes.**	**The Design has processes for student groups in an otherwise traditional school setting.**	**The Design features are student centered within the confines of the school day.**	**The Design is learner centered to meet the students' academic and behavioral needs.**	**The Design is learner centered, future focused and based on research regarding students and learning.**
	Evidence:				

	One Size Fits All	Differentiated Instruction	Individualization	Personalization	Mass Customized Learning
Transitional Factors	**The transitional factors are a uniform plan for students and processes. Weight Bearing Walls and learning implementation remain the same. Plans are set to continue with current initiatives.**	**The transitional factors make accommodations and modifications for student groups in an otherwise traditional school setting. Weight Bearing Walls remain unchanged. Learning meets the groups of students' academic needs. Plans are set to continue with current initiatives.**	**The transitional factors are student centered within the school day and/or school walls. The school plans to address or is addressing some of the Weight Bearing Walls to meet individual students' needs. Plans are set to continue with current initiatives.**	**The Transitional Factors are learner centered to meet students' academic and behavioral needs. The school plans to address or is addressing many Weight Bearing Walls to meet individual students' needs. Plans are set to continue with current initiatives.**	**The Transitional Factors are learner centered to meet students' academic and behavioral needs. The school plans to or address all Weight Bearing Walls to meet the needs of the individual learner. Plans are set to continue with current initiatives.**
	Evidence:				

Transformational Technologies

One Size Fits All	Differentiated Instruction	Individualization	Personalization	Mass Customized Learning
Students have access to technology for a limited basis during the school day. Staff engage in a universal lesson at the same time. No differentiation occurs for students.	Students have access to technology for a limited basis during a school day of traditional lessons. The teacher receives immediate feedback to help modify the instruction for students within the cohort. All staff have the same lesson plan but account for modifications based on the feedback.	Technology allows for significant functional changes in the classroom as the teacher modifies the academic instruction for each student. Technology allows for efficient, effective peer and teacher feedback. Lesson-based questions increasingly come from the students versus the teachers.	Technology meets students' personal and academic needs during and beyond the school day. The technology supports student centered learning through content and skills concepts on a personalized basis. There are collaboration and communication opportunities. Questions and discussion are increasingly student generated.	Technology meets the students' personal and academic needs during and beyond the school day. The technology exists as a support for student centered learning through student-generated scheduling, instructional approaches and timeframes.
Evidence:				

Leadership

One Size Fits All	Differentiated Instruction	Individualization	Personalization	Mass Customized Learning
The leadership is a traditional approach to students' education.	The leadership accommodates groups of students in the school and during the school day, with the teacher at the center of the learning process. The leadership is a traditional approach to students' education.	The leadership accommodates individual students in the school and during the school day, with the teacher at the center of the learning process. The leadership remains a traditional approach to students' education.	The leadership accommodates individual students in the school and/or beyond the school day, with the students at the center of the learning process. The students identify their own learning paths with assistance from various leaders working within a system. The school personnel know their various leadership roles and implement them effectively.	The school system can easily identify and explain all aspects of the MCL-based leadership model. Leaders ensure that the learners are at the center of their learning. The leaders work to maintain growth for the learners and growth for the MCL process.
Evidence:				

Encountered Challenges

One Size Fits All	Differentiated Instruction	Individualization	Personalization	Mass Customized Learning
The school system remains traditional. There are little or no adjustments to educational practices. The school and/or teacher are content with maintaining a traditional approach to school.	**The school system and/or teacher is willing to accommodate a group of students at the classroom level and during the school day.**	**The school system and/or teacher is willing to accommodate individual students at the classroom level and during the school day.**	**The school system and/or teacher is willing to accommodate students to be at the center of their learning process during the school day and beyond it. Technology is a part of this process. The school personnel and system make adjustments to promote learning that will meet students' personal needs for success.**	**There is a direct alignment between the meeting of the personalized needs of the learner and the Strategic Design. All leadership types work in unison to address challenges to implementing MCL.**
Evidence:				

Next Steps

One Size Fits All	Differentiated Instruction	Individualization	Personalization	Mass Customized Learning
The school system remains traditional. There are little or no adjustments planned to educational practices. The school and/or teacher are content with maintaining a traditional approach to school.	**The school system and/or teacher is willing to continue accommodating a group of students at the classroom level and during the school day. There are minimal plans for modifying educational practices beyond the needs of student groups. Technology incorporation may or may not be among the planned initiatives.**	**The school system and/or teacher plans to continue accommodating individual students at the classroom level and during the school day. Technology incorporation may or may not be among the planned initiatives.**	**The school system and/or teacher is willing to accommodate students to be at the center of their learning process during the school day and beyond it. Technology is a part of this process and it will continue its influence. The school personnel and system make adjustments to promote learning that will meet students' personal needs for success now and in the future.**	**There is a direct alignment between accommodating the personalized needs of learners with the Strategic Design. All leadership types work in unison to address challenges to implementing MCL. The school system uses data to identify how MCL benefits its learners in the current year and through post-graduation.**
Evidence:				

Figure 3. Focused Concepts Graphic

The three means of data collection included MCL-based documentation, interviews and an onsite visit.

3.3.1 Documentation Collection

Specific requested documents from each district included: (1) comprehensive plan (2) school board minutes, (3) materials about MCL shared with staff, (4) professional development agendas related to MCL and (5) school board policies on any "Weight Bearing Wall" topics. Document collection and coding occurred prior to, and informed, the onsite visit and interviews. Each school submitted artifacts after the onsite visit and interviews, as necessary. Using a literature-based continuum of the "Focused Concept Graphic" (see Figure 3) for analysis provided a deeper understanding of the written MCL plans.

3.3.2 Interviews

The semi-structured interviews used a "snowball" sampling technique that helped provide a deeper understanding of MCL through multiple stakeholder lenses (Crossman, 2017). The semi-structured interview method created the flexibility of the "conversation" to veer from a set protocol, when appropriate, and led to a deeper understanding of the topic (Robert Wood Johnson Foundation, 2008).

The first interview at each school occurred with the district's MCL point-of-contact. As each interview concluded, there were requests for recommendations of others to interview based on their specialized knowledge of MCL in the school. There were multiple interviews conducted at each school. I recorded all interviews, with the participant's permission, and then coded each

interview using the concepts provided in Figure 2 (see Figure 2) and the "Focused Concepts" Graphic (see Figure 3). Access to semi-structured interview templates for administrators and for non-administrative staff provided a more reliable and fluid interview (See APPENDIX F and APPENDIX G). This interview approach provided the flexibility to ask spontaneous questions that promoted an opportunity for the interviewee to express further thoughts in a more relaxed atmosphere (Woods, 2011). Recording of researcher notes occurred immediately following each interview. This helped ensure that coding was efficient, most effective and to ensure best preparations toward future interviews. All interviewees remained anonymous as per IRB requirements and the research study's MCL process-based intentions.

3.3.3 Onsite Visit

The onsite visits provided evidence of MCL implementation through collected researcher notes, observations and any onsite interview opportunities. There was one onsite visit per school.

Comparisons and analysis of the three data type findings from Washington Area's Lincoln Elementary School and Polk Area's Jefferson High School proved valuable in two ways. First, it contributed to answers to this case study's three research questions. Second, it provided guidance for possible next steps at my own district.

3.4 RESEARCH DESIGN AND FOCUS AREAS

This research design built upon knowledge gathered in the literature review to associate the six Focused Concepts areas with data collected from the three data sources. Figures 1 and 2 served

as the guiding information with Figure 3, the Focused Concepts Graphic. The graphic identified the progression level for each of the Focused Concepts and the evidence collected for analysis (McClaskey & Bray, 2016; Schwahn & McGarvey, 2012). The coding first looked at each of the six major elements of the learning progressions guide. Next, codes of individual concepts allowed for exploration of patterns and themes. Subsequently, relationships of concepts and themes emerged. Finally, the chain of data helped to better conceptualize the concepts into themes (Miles, Huberman, & Saldaña, 2014).

The Focused Concepts correlated with Schwahn and McGarvey's (2012) critical elements for Mass Customized Learning (MCL) implementation. The elements included deriving a Strategic Design, having a written curriculum based on learner outcomes, learner outcomes that are flexible by learning format, technology-based learning opportunities, scheduling technology for individual learners, accountability technology for administration and leadership. These concepts, and how a school system overcomes challenges while growing through MCL, are below.

3.4.1 Strategic Design

Strategic Design lays the foundation for planning and implementation. They are learner-centered, future-focused and based on the best research regarding students and learning. A Strategic Design has two key components, the strategic direction and the strategic alignment. Strategic direction includes the organization's core values, its mission or exit learner outcomes and the vision of the organization. Strategic alignment refers to aligning people, policies, processes and organizational structure to accomplish the mission. Strategic direction and the

strategic alignment assure the student/learner is at the center of the decision-making (Dweck, 2006; Schwahn & McGarvey, 2012; Schwahn & McGarvey, 2014).

3.4.2 Transitional Factors

Transitional Factors identify how a school system has moved from a more traditional learning approach to one that implement MCL. Assessment of this component includes examples of "Weight Bearing Walls" (WBWs) (Schwahn & McGarvey, 2012). WBWs is a metaphor that the MCL founders use to identify a school's traditional structure components with its goals. WBWs include traditional school structure elements such as the use of grade levels, students assigned to classrooms, class periods or bell schedules, courses/curriculum, textbooks, solely using paper and pencils in lieu of technology incorporation, a letter grading system, report cards, learning restricted during school time only and the nine-month school year. MCL seeks to change these traditional structures during implementation. Schwahn and McGarvey (2012) explain that they limit high quality MCL for each learner.

These WBWs concepts helped school personnel understand the reason for why the district transitioned to MCL. Equally, they identified how the professional development measures contributed to or will contribute to MCL implementation. Additionally, staff could articulate how students were intrinsically motivated during school, in accordance with the Pennsylvania State Standards, and how funding contributed in the transition to and continuance of MCL.

3.4.3 Transformational Technologies

Transformational technologies allow learning to remain continuously student-centered through online access and technology. The teachers/facilitators, the students and their parents collectively determine the learner's rate of learning. Parents can access their child's learning records or portfolios, get tips on how to help their child and/or view the entire set of the school's learner outcomes. The technology enables learners to self-generate a personalized plan. Learners, with help from their learning coach and parents, schedule their activities, seminars, online instruction opportunities and community learning experiences. The school leaders use the same technology to track individual progress and locations throughout the day. It provides accountability for school staff, administrators, students and parents. The school bases all technological decisions and purchases on the positive impact the technology will have on the learners (Schwahn & McGarvey, 2012).

3.4.4 Leadership

Specific types of leadership, beginning with the superintendent of schools, develop as part of strategic direction and the strategic alignment. Schwahn and McGarvey (2012) identify five leadership domains that collectively form the leadership components of Strategic Design: (1) authentic leaders, (2) visionary leaders, (3) relational leaders, (4) quality leaders and (5) service leaders. Strategic direction requires authentic leaders and visionary leaders. Authentic leaders help the organization to create a compelling organization purpose. Visionary leaders solidly describe the organization's vision and help create a picture of the changes. Relational leaders help ensure that all are involved by maintaining the commitment to making the necessary

changes, providing the link between the strategic direction and the strategic alignment. Strategic alignment requires quality leaders and service leaders. Quality leaders develop and empower all stakeholders, therefore allowing a capacity to change. Service leaders manage the vision by continuously supporting the change. All are of equal and essential importance. Without each working effectively, high quality MCL cannot occur (Schwahn & McGarvey, 2012; Schwahn & McGarvey, 2014; Schwahn & Spady, 1998; Schwahn & Spady, 2010).

3.4.5 Encountered Challenges

School systems explore and identify challenges associated with planning for and implementing MCL. The school/learning community uses a team approach where leaders work together to offset the challenges of meeting each learner's needs. The students/learners as well as the rest of the learning community, the school personnel and parents/guardians remain committed to ensuring that MCL promotes learning for each learner (Dweck, 2006; Schwahn & McGarvey, 2012; Schwahn & McGarvey, 2014; Schwahn & Spady, 2010).

3.4.6 Next Steps

School systems/learning communities clearly identify the next steps toward sustainability and growth of staff/facilitators, students/learners, parents and community. The school and/or district has a clear plan and implementation for evaluating MCL during and after a learner's time with the school and/or district (Dweck, 2006; Schwahn & McGarvey, 2012; Schwahn & McGarvey, 2014).

3.5 CONCEPTUAL FRAMEWORK

This qualitative case study used a humanistic approach to learn about how each school system benefitted each learner through the learner's K-12 educational experiences (Huitt, 2009). Regoniel (2015) explains that a conceptual framework builds upon the researcher's synthesis of literature in helping explain a phenomenon, in this case Mass Customized Learning (MCL), then maps out the necessary next steps based on additional knowledge obtained through additional research.

Schwahn and McGarvey (2012) explain that the goal of MCL is to meet the personalized and customized needs of every learner while preparing the necessary skills, foundations and attitudes for success beyond high school graduation. This began by shifting a school system's mindset that is forward thinking, individual learner needs focused and learner empowered beyond personalized learning measures (Dweck, 2006).

When implementing MCL, districts moved beyond traditional structures to those that are flexible and completely learner-centered (Dweck, 2006; Schwahn & McGarvey, 2012). Recall that the tipping point beyond personalized learning to MCL occurs through two main ways: Transformational Technology, or technology usage that has a main purpose of overhauling the technology system within a school system, and creating flexible structures within a system that allow a learner to be the center of the learning opportunity (Schwahn & McGarvey, 2012). Along with Transformational Technologies, Schwahn and McGarvey (2012, 2014) focused heavily on the associated Focused Concepts of Strategic Design, Transformational Factors and Leadership that developed during MCL planning and implementation. The authors devoted chapters in *Inevitable…* to each of the first four identified Focused Concepts. The Encountered Challenges and Next Steps Focused Concepts, though, were lesser emphasized in the literature

than the other four Focused Concepts. However, they were equally important to MCL sustainability because they too examined why schools transition to learner-centered environments, how they did so and what it looked like during implementation. Encountered Challenges and Next Steps Focused Concepts developed from the Strategic Design, Transitional Factors, Transformational Technologies and Leadership Focused Concepts.

Since MCL is still relatively new, exploring how implementation begins and develops while demonstrating student growth and achievement is of paramount importance. However, each school system has its individual approaches toward planning for and then transitioning to MCL approach. Regardless, the MCL core values for each school should remain. Through exploration and analysis of each participant's strategies and its results, I better determined if MCL could be a long-term solution to a non-MCL-based district.

3.6 DATA COLLECTION AND ANALYSIS PROCEDURES

This study included three data sources: documentation, interviews and onsite visits. Each data source was then coded using the six Focused Concepts in association with what Schwahn and McGarvey (2012) suggested describe Mass Customized Learning (MCL) planning and implementation with fidelity (Figure 2). The study began with Washington Area School District and Lincoln Elementary School. Then, making use of learned refinements from this setting, I used similar study procedures for Polk Area School District and Jefferson High School. I used a triangulation of sources to analyze the data collected for each research question. Charts, graphs and/or tables comparing collected data supported conclusions and possible next steps. Broadly, triangulation helped ensure a well-developed, comprehensive account of the diverging data and

the consistencies within it through a conceptual framework and coding of responses (Robert Wood Johnson Foundation, 2008).

Miles, Huberman and Saldaña (2014) explained that qualitative case study requires multiple aspects when considering the conceptual framework to generate meaning from the data. These aspects include simultaneous engagement in data analysis, researcher memos, initial coding and exploration. The authors identified thirteen coding process steps. The coding process began with coding the collected data concepts then exploring emergent patterns or themes. This aligned with Saldaña's (2009) "First Step Coding Method," in which I broke down the qualitative data into specific parts then examined the similarities and differences using the Descriptive Coding Method. The Descriptive Coding Method focused on analyzing field notes, documents and artifacts. This data breakdown provided analytical leads for further studying results and seeing plausibility (Miles, Huberman & Saldaña, 2014). The coding process continued through clustering, counting quantities in data patterns, making comparisons/contrasts, partitioning variables, factoring and use of metaphors (Miles, Huberman & Saldaña, 2014). This process associated with Saldaña's (2009) "Second Step Coding Method," or the Pattern Coding Method. This step helped link the "First Step" material into a more meaningful analysis as responses evolved into a smaller number of themes.

The coding process then noted the relations between the variables and intervening characteristics between the variables before concluding by building a logical chain of evidence and developing conceptual or theoretical coherence (Miles, Huberman, and Saldaña, 2014). These latter coding steps aligned with Saldaña's (2009) third cycle coding method, the "Post-Coding and Pre-Writing" phase, which focused on the "Codeweaving" strategy. The "Codeweaving" strategy accounted for linking the various coded information into narrative

phrases. To curb confusion while identifying themes, I followed the data analysis tactic by Woods (2011) to identify five specific elements during the coding of responses based on Figure 2 (see Figure 2) and the Focused Concepts Graphic (see Figure 3). These elements include labels, definitions for each theme, descriptions of how each theme occurred, descriptions of qualifications or exclusions related to the themes and positive along with negative examples. The data collection and analysis provided a deeper understanding of MCL implementation and helped to inform my continuing practice as a school administrator.

3.6.1 Documentation, Interview and Onsite Visit Data Collection and Analysis

Source data collection and analysis developed through the usage of charts, graphs and/or tables for each school. Charts, graphs and/or tables used for all three sources included the Focused Concepts Graphic (see Figure 3) and the Documentation, Onsite Visit and Interviews Questions #1 and #2 Outline (see APPENDIX I).

Those used for documentation included the Focused Concepts Graphic, the District's Documentation Analysis Outline (see APPENDIX J) and the Documentation, Onsite Visit and Interviews Questions #1 and #2 Outline. Charts, graphs and/or tables used for onsite visits included the Onsite Visit Analysis Outline (see APPENDIX K), the Focused Concepts Graphic and the Documentation, Onsite Visit and Interviews Questions #1 and #2 Outline.

Lastly, eight interview charts, graphs and tables helped analyze interviews. Those initially used included the Interview Coding Template (see APPENDIX L), the Administrator Coding Template (see APPENDIX M) and the Staff Coding Template (see APPENDIX N). Others used included the Administrator Focused Themes Chart (see APPENDIX O), the Staff Focus Themes Chart (see APPENDIX P), the Staff and Administrator Themed Response Chart

(see APPENDIX Q), the Focused Concepts Graphic and the Documentation, Onsite Visit and Interviews Questions #1 and #2 Outline. All charts, graphs and tables helped triangulate the themes toward identifying the six Focused Concepts within the three study questions.

The Robert Wood Johnson Foundation (2008) explains that collecting texts and artifacts is a common yet important approach when studying a culture, social setting or phenomenon. It fosters understanding from those within or disassociated with the organization. Therefore, I sought materials and artifacts from each participant that promoted first in writing then through observations and interviews, MCL within the six Focused Concept areas.

3.6.2 Documentation and Onsite Visit Data Collection and Analysis Procedures

In accordance with the triangulation of sources, the conceptual framework technique and the coding of responses, I focused on three main aspects of each artifact or observation. First, how and for whom the participant created each MCL-based documentation artifact or what the observation identified. Second, what was or was not included in each document or observation. Lastly, by what means each participant used its documentation and/or onsite data visit. Documentation and onsite visit data coding then began immediately using the five-element system, the thirteen coding process steps and the multi-cycle coding method (Miles, Huberman & Saldaña, 2014; Woods, 2011; Merriam, 2009; Saldaña, 2009).

There were specific differences between documentation and onsite visit data. For example, the documentation was readily available whereas the onsite data included verbal communication with a school representative and observations and thus developed during data collection compared to documentation. However, both followed the same data collect process.

The Focused Concepts Graphic served as the initial template for organizing artifacts into one or more of the six Focused Concepts categories for each school. As I considered each type of documentation or observation, I listed the artifact in one or more aligning Focused Concept spaces. I transferred the findings to the second documentation template, the District's Documentation Analysis Outline (see APPENDIX J) for documentation data and to the second onsite visit template, the District's Onsite Analysis Outline (see APPENDIX K) for onsite visit data, for later analysis. This approach helped generate meaning from the data by simultaneously engaging in data analysis of each document (Miles, Huberman & Saldaña, 2014). Equally, it aligned with the initial steps for coding suggested by the literature (Miles, Huberman and Saldaña, 2014; Saldaña, 2009). In addition, it established the foundation for answering Question #1 of the study, "What considerations led to the adoption of Mass Customized Learning in the two schools?" and Question #2, "How is Mass Customized Learning being implemented and evaluated in the two schools?"

Then, using a different highlighted color for each "Look-For" Continuum, I highlighted phrases as data aligned with each respective Continuum at the top of the applicable Focused Concepts section. There were two purposes for highlighting these data. First, it helped code where each document or onsite observation finding related on the Continuum rubric. Second, it helped transition to the documentation then onsite analysis review, particularly for answering Question #3 of the study, "How does the implementation align with the Mass Customized Learning model?"

Each school District's Documentation Analysis Outline (see APPENDIX J) and District's Onsite Analysis Outline (see APPENDIX K) displayed copied and pasted documentation artifacts. The outline began with research Question #1 followed by every aligned artifacts below

each of the six concept areas. The pattern continued for Question #2. Elimination of findings that did not apply to MCL considerations aided efforts for answering Question #1. Elimination of findings that did not apply to MCL implementation aided efforts for answering Question #2. I copied and pasted the remaining documentation artifacts to a second Focused Concepts graphic.

The comprehensive documentation and onsite visit Focused Concept Graphics served three purposes. First, it compared all remaining document and observation findings with MCL-specific evidence. This helped analyze then answer where on the Focused Concepts Graphic (see Figure 3) each document associated with Question #3. Second, it identified the relations between variables, found intervening variables and built a logical chain of evidence toward making a conceptual coherence process for documentation. Finally, it helped prepare findings for the triangulation phase of analyzing the documentation, onsite visit and interviews data (Miles, Huberman & Saldaña, 2014).

Patterns within the documentation and observation artifacts emerged through the creation and analysis of a Focused Concepts Graphic for each district's artifact and observation. Patterns developed through the creation and analysis of the District's Documentation Analysis Outline followed by the Documentation, Onsite Visit and Interviews Questions #1 and #2 Outline (see APPENDIX I). The connection of documentation templates, as the Robert Wood Johnson Foundation (2008) recommends, along with the literature review findings, the patterns became clearer. Equally, the implementation data from each of the six focus areas became very telling for each school compared to what Schwahn and McGarvey (2012) identify as MCL.

3.6.3 Interview Data Collection and Analysis Procedures

The interview data analysis sought to find patterns in the interviewee responses and to compare responses with the literature review findings. Similar to the onsite visit data, the interview data was too developmental in nature. Unlike documentation data, interview data collection developed during the collection instead of being immediately available. Multiple administrator and staff interviews occurred from Washington Area and Polk Area. Interviews occurred following documentation analysis and on the day of or within two weeks following the onsite visit.

The interview data analysis further developed the individual themes and theoretical concepts associated with the case study's essential questions. Discovery of the themes developed through coding of the six Focused Concepts (Strategic Design, Transitional Factors, Transformational Technologies, Leadership, Encountered Challenges and Next Steps) for three main purposes. First, the responses were new information. Second, I began formulating ideas for questions during possible follow-up interviews. Lastly, the data from one interview helped analyze then plan for another interview (Woods, 2011). When applicable, following a second interview, I theorized, analyzed and challenged ideas from initial interviews through memos and initial code trends that built upon the original conceptual framework meanings (Miles, Huberman & Saldaña, 2014).

Data analysis occurred immediately following each of the interviews to help ensure that coding was efficient, was most effective and to ensure best preparations toward future interviews. Equally, I validated the data by receiving permission to audio record interviews. I also permitted participants to review and then revise or add to their thoughts (Merriam, 2009).

Following each interview, I used a template and Hahn's general 4-step process for framing the concepts to triangulate the data. With the question centrally positioned on the page, I placed all paraphrased or rewritten statements to the right side of the page while placing thoughts and theories to the left (see APPENDIX L). I color-coded the 11 administrator/10 staff interview questions' responses to identify similarities and differences in the raw data. Then, I compared, contrasted and then clustered information to establish a foundation for analyzing collective administrator and/or staff interview data.

Each school's Administrator Coding Templates (see APPENDIX M) and the Staff Coding Templates (see APPENDIX N) displayed multiple columns. A column to the far left identified study Questions #1 or #2. The questions were color-coded to begin breaking down planning or implementation data. The middle columns identified each administrator or non-administrative staff interviewee's collective takeaway points. A column to the far right identified the patterns of combined takeaway points within each of the six Focused Concepts. I color-coded the six Focused Concepts takeaway points for later analysis of each school's interview data for each Focused Concept area.

The Administrator Focused Themes Chart (see APPENDIX O) and the Staff Focus Themes Chart (see APPENDIX P) provided further refinement of administrator or staff interviewee data through relationship analysis within variables and the development of patterns. Transferring staff and administrator patterns to the Staff and Administrator Themed Response Chart (see APPENDIX Q) identified analyzed themes within the six Focused Concept areas and the study's three research questions. The identified six Focused Concepts and study research questions then contributed to triangulation of data from the Documentation, Onsite Visit and Interviews Questions #1 and #2 Outline (see APPENDIX I).

Lastly, using a Focused Concepts graphic (see Figure 3) helped to analyze highlighted themed responses transferred from the Staff and Administrator Themed Response Chart findings. The highlighted phrases helped to identify and thematically code where data aligned with each respective Continuum at the top of the applicable Focused Concepts section. It also helped transition to the interview analysis review for answering Research Question #3.

This comprehensive approach for analyzing interview data helped generate meaning by engaging in data analysis of each interview response simultaneously (Miles, Huberman & Saldaña, 2014). Equally, it aligned with the thirteen coding steps process as identified by Miles, Huberman and Saldaña (2014) and with Saldaña's (2009) three step coding method. It also helped triangulate the data prior to answering all three of the study's questions.

3.6.3.1 Pilot Study. The interview questions pilot study obtained ample feedback regarding the interview questions prior to the first interviews beginning. It ensured that the questions represented clear, easily understood expectations and helped guarantee that the respondents had necessary information. The doctoral study group and the dissertation committee provided contributions and feedback on multiple occasions. The pilot study met the goal of refining interview questions that matched the intended criteria and provided a strong starting point for collecting then analyzing interviews.

3.7 LIMITATIONS OF THE STUDY

All three data sources contributed to uncovering the planning and implementation themes for each of the six focus areas for each school. Additionally, they provided essential components to

uncover a deeper understanding of MCL planning and implementation in comparison with how Schwahn and McGarvey (2012) identify Mass Customized Learning. Despite well-intended plans to provide robust and strong data-informed conclusions, there were natural and unintended limitations. The natural limitations included the number of participating school districts. Although I obtained a deep understanding of how each participant planned for and implemented Mass Customized Learning (MCL), the number of districts did not provide a comparative comprehensive data collection in terms of quantity of schools as would a traditional survey.

The unintended limitations were threefold. One was from the interviewee. When responding, there was the possibility that he or she was not forthright with his or her experiences about the district's MCL approach. Regardless of the reason, such a limitation could potentially skew the collected data and thus effect the analysis considerations. A second unintended limitation was the nature of the interview. With a semi-structured interview format, occasional spontaneous questions provided answers that became difficult to analyze or fit into a theme. Additionally, some spontaneous questions potentially seemed unfair or misleading despite my best intentions to avoid asking unwelcoming questions (Woods, 2011). However, participant validation data limited this likelihood. A third unintended limitation was personal perspective. Despite my intention to remain objective during data analysis based on the review of literature data, there was potential for personal bias toward perspectives on responses and data findings.

Regardless, I mitigated the goal of maintaining an objective stance, despite known natural and unintended limitations, throughout the study in two main ways. First, my background provided a greater knowledge of how participating districts implemented MCL. In addition, the case study findings, in association with the review of the literature, provided clearer next steps when considering MCL for my district of employment.

3.8 RESEARCH PERSPECTIVE AND PROFESSIONAL KNOWLEDGE

There were potential biases from past or current experiences that could have influenced the analyzed responses, observations and trends. However, prior to considering Mass Customized Learning (MCL) implementation at my own district, I needed a deeper understanding of the attributes and concerns associated with MCL from those already implementing it. Additionally, the analytical process and procedures depended heavily on clarity and applicability. To prevent compromised credibility of the study and personal credibility, I ensured that processes, procedures, reports and documentation were as complete as possible.

There were limitations with this exploratory case study. However, through the exploration of both schools' implementation of what they believe is a true MCL approach, I obtained multiple data points for analyses. The data points helped identify Focused Concept themes and answered this case study's three research questions. They also clarified potential next steps, despite any limitations of the study.

3.9 CONCLUSION

This exploratory case study sought to detail Mass Customized Learning (MCL) during implementation at two schools in Pennsylvania and to obtain a better understanding of MCL productivity and sustainability. Through the collection and analysis of each district's MCL-related data, I learned how MCL implementation related to the findings in the review of the literature. The data findings and the review of literature helped determine if implementing an MCL approach would be worthwhile at my district of employment. Chapter 4 identifies and

explains in detail the triangulation of data summarization, analysis at Lincoln Elementary School within the Washington Area School District. It also associates with the three overarching study questions. Chapter 5 identifies and explains in detail in detail the triangulation of data summarization and analysis at Jefferson High School within the Polk Area School District. Chapter 5 also associates with the three overarching study questions. Chapter 6 identifies the study's findings and explains how they align with the Conceptual Framework. Chapter 7 identifies then summarizes the implications for future research along with personal practice and next steps.

4.0 CASE STUDY: WASHINGTON AREA SCHOOL DISTRICT AND LINCOLN ELEMENTARY SCHOOL

4.1 INTRODUCTION

I have chosen to present a summarization and analysis of each case separately in the next two chapters (Chapters 4 and 5), with subsequent chapters comparing cases and considering implications. This chapter describes the Mass Customized Learning (MCL) planning, implementation and sustainability measures for Washington Area School District (WASD) with a concentrated focus Lincoln Elementary School (LES). WASD is the first of two participating districts and schools in this qualitative study.

Triangulation of three data sources, documentation, onsite visits and interviews, identified and explained the six Focused Concepts characteristics in connection with the literature review findings. Identification of data collection sources prelude and help clarify the triangulation of data summaries for each Focused Concept. The chapter concludes with a narrative of the triangulated data from the six Focused Concepts in association with the three overarching qualitative study questions.

4.2 WASHINGTON AREA SCHOOL DISTRICT MASS CUSTOMIZED LEARNING SOURCES IDENTIFICATION

Washington Area School District (WASD) provided multiple resources for the three data sources. Figure Seven (see Figure 4) identifies the data collection sources or information for each procedure. Analysis from each data source and type helped develop the analysis.

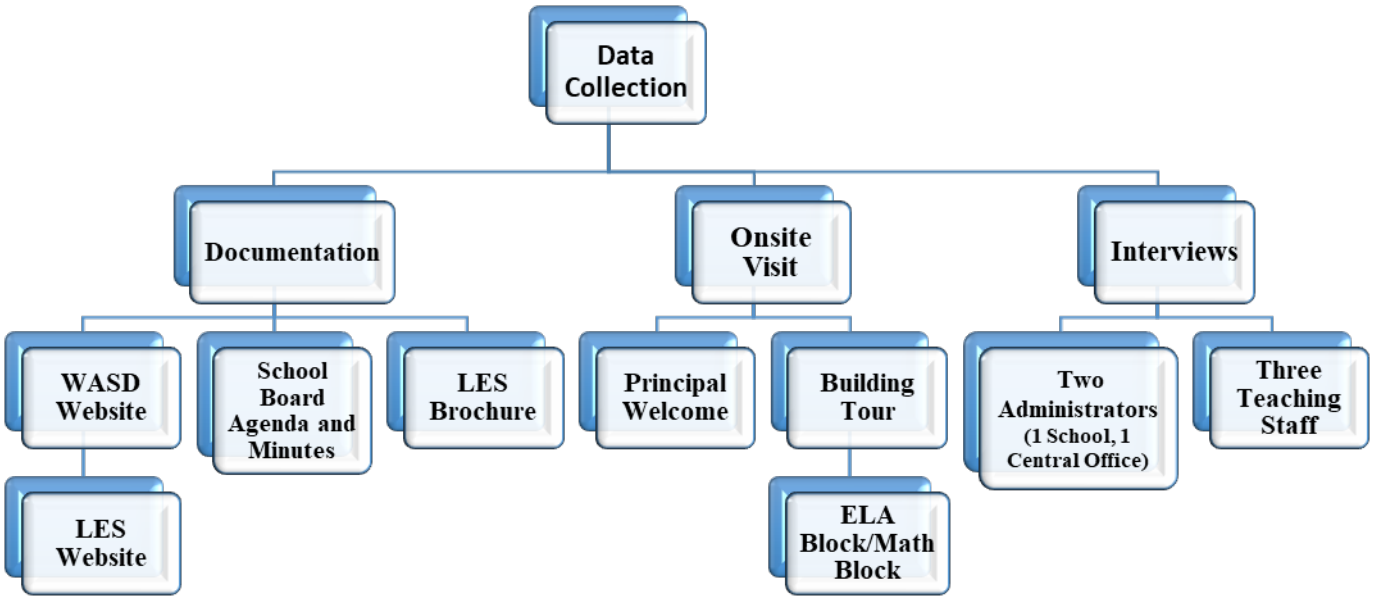

Figure 4. Washington Area School District MCL Sources Identification Chart

4.3 WASHINGTON AREA SCHOOL DISTRICT AND LINCOLN ELEMENTARY SCHOOL DOCUMENTATION

Documentation collection and coding for Washington Area School District (WASD) and Lincoln Elementary School (LES) began on December 28, 2017, and concluded on January 13, 2018. It occurred prior to and informed the onsite visit and subsequent interviews.

Documentation collection began with reviewing and coding the WASD website. Specific look-for items included links and information on the district's comprehensive plan, Mass Customized Learning (MCL)-focused LES and/or WASD-created website, available School Board agenda minutes, School Board policies and other MCL-based topics. The process concluded by reviewing a brochure explaining MCL at LES. I received it from WASD's MCL point-of-contact during the onsite visit. The documentation obtained and reviewed provided valuable written information of WASD and LES' MCL preparations and implementation.

4.3.1 Washington Area School District Website

The Washington Area website's main page provided a general background to the district and a glimpse into MCL initiatives. Website documentation acquired for review provided the first data source for multiple Focused Concepts Graphic sections. Equally, it further established the foundation for understanding how Washington Area planned and implemented MCL. Highlights included:

- Reference to local history, contact information, photos of students engaged in school day activities and the school's mascot.

- Hyperlinks to the high school, the middle school, the three elementary schools including Lincoln Elementary School, the early childhood learning center and the virtual academy
- Hyperlinks to or for District Information, Enrollment, Athletics, Parents, Lunch and Community.
- A hyperlink to the Student Center and Faculty Center that provided a hub for each of the district-available resources.
- An MCL hyperlink that displayed four videos. Each video showed the same individual, a Lincoln Elementary School facilitator, standing in front of a conference room where adults were seated facing him around the table. Displayed on the whiteboard behind the individual were website addresses to three MCL-based websites and/or districts.

4.3.2 Washington Area Board of Directors Policies, Agendas, Minutes and Information

The Board of Directors section provided the School Board's agreement to the initiatives in recent years, MCL-based or otherwise. Highlights included:

- Central administration office and School Board-related hyperlink tabs, including the 2018-2021 Comprehensive Plan and the Board of School Directors. The 2018-2021 Comprehensive Plan did not display.
- Access to the Board Information, Board Documents and Board Webmail Login.
- Information on Meetings, meeting agendas, Board Policies, Public Notices and school calendars
- The 2015-2018 Comprehensive Plan.

4.3.3 Lincoln Elementary School Webpage

The Lincoln Elementary School (LES) webpage was very MCL-centered. This webpage provided additional documentation data during the analysis of relationships among intervening variables phase of documentation data analysis (Miles, Huberman & Saldaña, 2014). Key features included:

- The mission statement, the school's beliefs along with photos of school activities, school news, a school calendar and a Google map of the school's location.
- Hyperlinked tabs for school, parent, student and school programs-related information.
- Hyperlinked tabs and information that aligned with Schwahn and McGarvey's (2012) MCL vision such as the staff directory that referred to its teachers as facilitators and pictures that referred to students as learners.

4.3.4 Lincoln Elementary School Brochure

A school trifold brochure, issued at the start of the onsite visit, promoted Mass Customized Learning (MCL) implementation. Findings included:

- A front cover that aligned MCL with the PA Common Core standards and provided the Lincoln Elementary School (LES) Mission Statement.
- Terms such as "learning community" instead of school, the background to how LES implemented MCL and common characteristics to look for during the tour.
- A learner-centered 12-day instructional planning and their English-Language Arts (ELA)/Mathematics and Flex Block scheduling.

- References to technology accessibility via Google, Empower and Class Dojo along with names of benchmark assessments used as data sources for determining learner placement during the school day.
- A focus on growth mindset (Dweck, 2006) adding to the acknowledgement that LES has not implemented MCL as fully as they hope to do in the future.
- Reference to the book, "Inevitable…" by Chuck Schwahn and Bea McGarvey (Schwahn & McGarvey, 2012).
- Specific "look-for" characteristics that could help further formulate MCL implementation at Washington Area School District (WASD)/LES.

4.3.5 Focused Concept Areas and Documentation Data

Written documentation analysis set the foundation for the triangulation of data analysis regarding how Washington Area School District planned for and then implemented MCL at Lincoln Elementary School. The onsite visit data and analysis helped develop and frame the emerging themes within each Focused Concept area upon the triangulation of data.

4.4 LINCOLN ELEMENATRY SCHOOL ONSITE VISIT

Collected researcher notes and observations during the onsite visit to Lincoln Elementary School (LES) on January 12, 2018 provided evidence of Mass Customized Learning (MCL) implementation. It also provided insight to LES' daily MCL operations. The solo onsite visit

followed a review of the available documentation. Onsite visit coding occurred immediately after the visit. Several findings helped the coding process:

- To maximize instructional time during the day, learners self-selected a purchased lunch choice on the chalkboard cart in the hallway outside of the main office. Baskets beside the chalkboard cart allowed for those who packed a lunch to leave it in the appropriate location. A-D letters at the top of the chalkboard cart and the Team letter signs above each bin aligned to the learner teams during lunch along with their Physical Education, Art and Music classes.
- A "SOAR" Rewards suggestion box connected to the window display showing the specific rewards possibilities (see Figure 5). SOAR was the Positive Behavior and Intervention Supports (PBIS) districtwide initiative. SOAR stands for Stay Safe, Own your behavior, Achieve, and Respect each other. The SOAR rewards options promoted individual positive behavior. To the right of the library entrance was a SOAR-themed calendar (see Figure 6). Team-based and team-selected rewards occurred upon the learner team earning enough SOAR tickets.

Figure 5. SOAR Reward

Figure 6. SOAR Calendar

- The school's mission statement: "Lincoln Elementary School is a nurturing and caring environment. Our mission, with the support of parents and community, is to empower all students with the knowledge and confidence to be successful in all areas of their lives." Several locations displayed this mission statement.
- A sign promoting the learning community MCL-based expectations (see Figure 7) on the window to the library.

Figure 7. MCL Expectations Chart

- A 15-minute introduction from the LES principal summarizing the how, who, where, when and why aspects of MCL planning and implementation. The principal explained that professional development in terms of reading multiple books on MCL along with growth mindset (Dweck, 2006) helped plan for and implement MCL. She also briefly summarized the implementation changes in year two of MCL and potential next steps. Lastly, she explained that the library is now one of the designated classrooms while giving a brief overview of the MCL concept-based flexible learning schedule that rotated every 12 days and the daily scheduling time blocks that included a flex block (Schwahn & McGarvey, 2014; Schwahn & McGarvey, 2012).
- An English-Language Arts (ELA) lesson from one of the Team D facilitators. She brought her learner cohort in to use the library at the start of the school day. She pushed a facilitator supply cart as she led the learners. The cart had her laptop, markers, paper, along with handouts for the lesson and other transportable supplies. There were 22 learners. This day was Day 3 of the 12-day learning cycle. The lesson's first 12 minutes was whole group, teacher-centered learning. The facilitator used a Promethean Board/interactive whiteboard to display a PowerPoint. The facilitator checked quickly for learning target comprehension. She then spent a few minutes transitioning into what McClaskey and Bray (2016) would consider an individualized learning activity by explaining the Google Doc's self-selected activity on persuasion techniques for writing. All learners had individual access to a Google Chromebook.

- An opportunity to view the "I Can…" templates that identified their learning goals for ELA, for mathematics and their self-selected personal goal. Each learner's parent signed the template. The learner carried the templates in their PTO-purchased individual binder.
- A tour with four learner tour guides identified a display case with a "rock garden." When learners achieved three personal goals at any point during the school year, they painted a rock symbolizing their accomplishment during a flex block time. Then, they would place it in the display case or outside in the rock garden. Traditionally, one personal goal takes multiple 12-day cycles to accomplish.
- Hallways had MCL-associated bulletin boards that promoted "Grit" (Duckworth, 2016) (See Figure 8) and "Mindset" (Dweck, 2006) (See Figure 9).
- A bulletin board that service leaders (Schwahn & McGarvey, 2012) created recognizing the community donors supporting MCL (See Figure 10). The donors provide supplies for the projects that students create upon mastery of content.

Figure 8. Grit Bulletin Board

Figure 9. Mindset Bulletin Board

Figure 10. Community Donors Bulletin Board

Figure 11. Commons Room Bulletin Board

- Two rooms that LES designated for facilitator common rooms (See Figure 11). Each facilitator room had the same characteristics: a desk, a few storage bins and filing cabinet for each facilitator, walk-in closets in the back of the room, a centrally-located oval table with 8 chairs, paper materials and resources for ELA, mathematics, Science and SOAR-

related curricula, a motivational display, two big whiteboards at the front of the room and magnets with learners' names aligned to standards-based groups and levels. This arrangement created flexible spacing without adding renovation costs to the building (Schwahn & McGarvey, 2012).

Figure 12. Color-Coded Nameplate on Classroom

- Classroom entranceways that had a designated color on the nameplate instead of the name of the grade level or teacher (See Figure 12). The library and classrooms were designated instructional areas for facilitators and learners. Facilitators and learners did not report to the same room during the day. Instead, the facilitators determined their room location based on learners' needs during their Professional Learning Community (PLC) team time throughout the 12-day learning cycle. Day 8 is the primary data analysis day for current and upcoming learning cycle cohorts. These arrangements associated with the school's MCL flexible scheduling organizational approach (Schwahn & McGarvey, 2012)
- Observation of a second ELA lesson. Learners were finishing reading an article then designing a project to solve the environmental concern of plastic bottles. Learner expectations included writing, problem solving, creativity and collaboration with

classmates. In alignment with a personalized, or learner-centered, learning approach (McClaskey & Bray, 2016) the facilitator worked one-on-one with learners then with small groups as necessary during the 10 minute observation. Learners used Chromebooks or paper and pencil supplies, depending on their step in the project. Expectations and reminders were on the white board at the front of the room (See Figure 13). The learners remained the focus of their own learning.

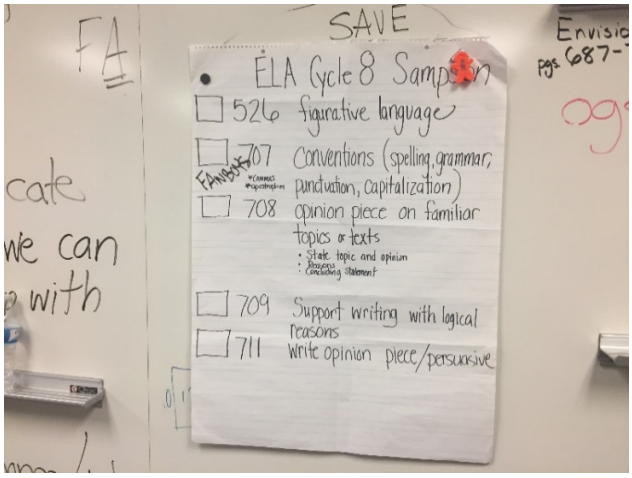

Figure 13. Learning Target Information

- Observation of a mathematics lesson. The facilitator differentiated instruction for six learners while working with the small groups. One learner was working individually on his Chromebook and using learning software personalized to his learning needs. Three other learners were working individually on three separate activities. Each activity was in alignment with the posted learning target/"I Can…" statement. The range of instructional approaches aligned with McClaskey and Bray's (2016) differentiated instruction, individualization and personalization continuum. Equally, the learner engaged with personalized learning aligned with what Toshalis and Nakkula (2012) identify as self-regulation theory, the highest of personalized learning approaches.

- Updates from a few facilitators from both Team C and Team D shared thoughts on MCL implementation daily routines, challenges, successes and next steps.
- A 20-minute meeting with the principal. The principal provided a staff email list (Crossman, 2017). The principal requested that I wait until after the next LES faculty meeting the following week when she could notify the staff of my possible contact. The principal planned to be out of the office at the start of the upcoming week due to a meeting with representatives from the Gates Foundation. The school was potentially receiving additional grant funding associated with their initiatives in MCL.

4.4.1 Focused Concepts Areas and Onsite Visit Data

The onsite visit observations and field notes built upon documentation findings in the six Focused Concepts areas. They generated inquiry thoughts for expanding upon during interviews. The onsite visit data helped further clarify MCL planning and implementation at Lincoln Elementary School.

4.5 INTERVIEWS DATA AND FOCUSED CONCEPTS AREAS

Two administrator interviews and three non-administrative staff interviews occurred between January 23 and January 31, 2018. For the purposes of this study, and to preserve anonymity, each interviewee received a pseudonym. All Washington Area School District (WASD)/Lincoln Elementary School (LES) participants received an inquiry to recommend additional interviewees as part of the "snowball" sampling technique (Crossman, 2017) prior to the end of each

interview. To help frame the Focused Concepts while providing a more reliable and fluid interview, all interviewees received prior access to the six Focused Concept summary (see APPENDIX D), the interview consent form (see APPENDIX E) and either the administrator or non-administrative staff semi-structured interview templates (see APPENDIX F and APPENDIX G).

4.5.1 Administrator Interviews

There were two administrator interviews. The first administrative semi-structured interview occurred with Ms. Hope via an audio-recorded phone conference on January 23, 2018. The second administrator interviewed was Ms. Faith. I interviewed her in the morning then again in the afternoon on January 24:

- Ms. Hope, the Lincoln Elementary School principal, gave permission to be audio recorded prior to the start of the interview. Ms. Hope, a multi-decade educator and veteran administrator, gave detailed answers for each of the questions from the template and those asked as an extension of the question set. She expanded on each of the six Focused Concepts in detail. She recommended that I speak with any of the school's facilitators at LES to gain a better insight of MCL implementation there. Ms. Hope did not share additional feedback following our interview.
- Ms. Faith, the Washington Area School District superintendent, gave permission to be audio recorded prior to the start of both phone conferences. She was a multi-decade educator with substantial experience serving in a leadership role, gave answers that provided a bigger picture for MCL at LES and WASD currently and long term. Ms. Faith expanded on each of the six Focused Concepts while elaborating most on the

Strategic Design, encountered challenges and next steps concepts. She believed that speaking with other administrators and/or the school's facilitators at LES would be beneficial. Ms. Faith did not share additional feedback following our second interview.

4.5.2 Staff Interviews

There were three teaching staff interviews. The first staff semi-structured interview occurred with Ms. Smith via an audio-recorded phone conference on January 25, 2018. The second and third staff interviews were with Ms. John and Ms. Doe on January 31:

- Ms. Smith, a LES lower grade levels facilitator and a multi-year educator in the district but still within her first 10 years as an educator, answered many of the questions on the template prior to hearing the question during her approved audio-recorded interview. She also gave detailed answers for questions asked as an extension of the question set. Ms. Smith touched on a few encountered challenges thoughts that the administrator interview questions template sought to inquire. She expanded greatly on five of the six Focused Concepts while providing brief thoughts on the Strategic Design at LES and WASD. She recommended that I speak with team facilitators who had been at LES longer to gain a better insight of the school prior to and since MCL implementation. Ms. Smith did not share additional feedback following our interview.
- Ms. John and Ms. Doe, both of whom were LES upper grade levels facilitators interviewed together via an audio-recorded interview. They spoke briefly to the visitors in the facilitator commons room. Therefore, I had a foundational idea of their individual thoughts on MCL. Both Ms. John and Ms. Doe took turns sharing thoughts in detail. Neither dominated the conversation. Both were candid about the six Focused Concepts

inquiries. Both Ms. John and Ms. Doe are multi-decade educators. They have spent much or all of their careers as employees in the WASD. Both provided detail on five of the six Focused Concepts. They summarized the Strategic Design at LES and WASD in a little more detail than Ms. Smith but not as much as they summarized the administrators in a little more detail than Ms. Smith. They recommended that I speak with LES facilitators to gain a better insight of MCL there. Neither Ms. John nor Ms. Doe shared additional feedback following our interview.

4.5.3 Interview Data and Triangulation Within the Six Focused Concepts

The interview data further developed themes from the documentation and onsite visit findings. Interview findings and analysis provided the final data source for the triangulation of data. Equally, it helped solidify emerging themes from the six Focused Concepts.

4.6 TRIANGULATION OF DATA: THE SIX FOCUSED CONCEPTS AND QUALITATIVE STUDY QUESTIONS FINDINGS

The triangulation of documentation, onsite visit and interview data built upon the findings as each individual data source identified alignment with the other two. Links in the coded information became narrative phrases and developed into themes through the triangulation of data (Miles, Huberman, and Saldaña, 2014; Saldaña, 2009; Woods, 2011). Triangulation of the data identified and explained findings within the six Focused Concepts (see Figure 2).

In addition, the triangulated data, along with the review of literature findings, helped answer all three questions associated with this qualitative case study. Equally, it also identified how and why WASD/LES determined how MCL was the preferred educational approach for their learners compared to the findings in the literature. The findings of the first research question, "What considerations led to the adoption of Mass Customized Learning in the two schools?" and the second research question, "How is Mass Customized Learning being implemented and evaluated in the two schools?" developed answers to the third question, "How does the implementation align with the Mass Customized Learning model?"

4.6.1 Strategic Design

The Strategic Design represents the organization's core values, vision and mission in association with how the organization implements its mission (Schwahn & McGarvey, 2014; Schwahn & McGarvey, 2012). Recall that the Strategic Design, or Comprehensive Plans as the Pennsylvania Department of Education (PDE, 2016) would refer to it, sets the foundation for planning and implementation. It has two key components, the strategic direction and the strategic alignment (Schwahn & McGarvey, 2012).

Lincoln Elementary School (LES) had a more established Strategic Design than did Washington Area School District (WASD).The triangulation of data identified the deficiencies in the WASD-level Plan versus that of the LES-based Plan.

4.6.1.1 Washington Area School District Strategic Design

At the district level, the Strategic Design is in the "studying the future," or beginning phases of implementing a MCL-based Strategic Design (Schwahn & McGarvey, 2014; Schwahn &

McGarvey, 2012). The current WASD Comprehensive Plan identified and explained the district's vision statement and core values. The Washington Area School District (WASD) website and Board minutes identified components of a Strategic Design. The School Board agendas helped establish pieces that could and do fit into MCL districtwide. For example, there were multiple School Board approvals for technology infrastructure, access and hardware and software. There were also MCL-based presentations by the LES principal at Board meetings. Equally, the district's leadership team helped lay the MCL foundations for a true Strategic Design versus a Comprehensive Plan with book studies on *Inevitable…* (Schwahn & McGarvey, 2012) and *Mindset* (Dweck, 2006). However, the current WASD Comprehensive Plan and School Board policies remain universal with no mention of MCL or MCL-based characteristics.

As per Ms. Hope and Ms. Faith, the district's Comprehensive Planning Committee continued to develop a new Comprehensive Plan that tailored more to MCL initiatives districtwide. Ms. Faith anticipated completion of the updated Comprehensive Plan by the start of the 2018-2019 school year. They confirmed that School Board policies remained the same as prior to MCL implementation at LES. Ms. Faith stated that she "anticipated necessary changes with the upcoming Comprehensive Plan." Their thoughts explained why the WASD website link is inactive along with why the current Comprehensive Plan and School Board policies are traditional in nature.

4.6.1.2 Lincoln Elementary School Strategic Design

LES' Strategic Design was much further developed. Their strategic direction included a Mass Customized Learning (MCL)-based Mission Statement, learner-centered core values and exit learner outcomes that focused on meeting the needs of each learner. The building-wide book studies on "Inevitable…" (Schwahn & McGarvey, 2014; Schwahn & McGarvey, 2012) and

"Mindset," (Dweck, 2006) established the foundational knowledge while developing MCL interest for all interviewees. Ms. Hope, the LES principal, also read the book, "Inevitable Too: Total Leaders…" (Schwahn & McGarvey, 2014). The LES brochure promoted the core values and its mission. It explained how its teachers, or facilitators, meet the individual needs of their learners and thus implement their MCL vision and mission through learner-centered scheduling. The WASD website videos discussed a vision along with what the staff's mission should be for its students, or learners at LES.

Their strategic alignment adhered to Schwahn and McGarvey's (2012) thoughts too. All five interviewees alluded to continuous communication, team efforts and commitment to MCL through the planning for then implementation of their 12-day learning cycle and the "I Can…" statements that the learners created with guidance from their case managers/facilitators. Multiple staff members' attendance at along with some presenting at MCL national conventions in recent years helped implement MCL initiatives. Ms. Smith and Ms. John elaborated on how 1:1 computing access contributes as a process and organizational structure to the strategic alignment components of the Strategic Design. This access along with how they use the technology efficiently helped meet the school's mission statement by empowering all students with the knowledge and tools for success. LES display cases, visual aids and bulletin boards promoted a growth mindset (Dweck, 2006) and personalized learning opportunities (McClaskey & Bray, 2016) associated with the highly visible school's mission statement.

The LES team acknowledged, however, that they were still developing their school's Strategic Design. For example, the school brochure promoted that as a school "We have a long way to go!!! But we just didn't get there YET (Growth Mindset!!)" (Dweck, 2006). In addition, Ms. Hope acknowledged, that they are "building the plane in flight," choosing to implement

MCL and then put it in writing regarding their Strategic Design. Her thoughts matched those of Ms. Faith, Ms. Smith and Ms. John. Despite this, the school had clear indicators of what Schwahn and McGarvey (2012) identify as an MCL Strategic Design beyond that of the district.

4.6.2 Transitional Factors

Transitional factors are what Schwahn and McGarvey (2012) refer to as breaking down "Weight Bearing Walls," (WBWs) or traditional structure components that impede MCL-based goals. WASD and more so LES planned for and implemented several steps to move to MCL. LES is in the process of offsetting eight of the ten WBWs: (1) grade levels; (2) students assigned to classrooms; (3) class periods/bell schedules; (4) courses/curriculum; (5) textbooks as the sole resource; (6) a paper and pencil-based learning and assessments (7) an ABC grading system and (8) report cards as the sole student progress provider. The WBWs that was not in consideration were the learning happens in schools concept and the nine-month school year (Schwahn & McGarvey, 2012).

4.6.2.1 MCL Planning to Offset Weight Bearing Walls

Ms. Hope and Ms. Faith explained that prior to MCL implementation the teachers planned and tried to differentiate instruction to meet their students' academic needs. However, maintaining a traditional classroom setting was not fully engaging all students. Staff interviewees echoed these thoughts. Administration and staff became increasingly frustrated at the lack of student engagement while not meeting every students' needs throughout each day. Ms. Hope explained, "It wasn't that our teachers weren't trying, they were. They had great lesson plans and were putting in the effort. Students were still not engaged, though, and teachers were starting to get

burned out." Ms. Doe mentioned the phrases, "burn out" and "wanting to try a new approach that didn't focus on the traditional model and PSSA testing preparation." The other three interviewees shared similar thoughts prior to MCL implementation.

Therefore, MCL planning began at LES in 2013. The staff was committed to learning more about and implementing MCL (Hattie, 2009). "They were all in," stated Ms. Hope. "They just had their act together," explained Ms. Faith referencing the LES staff's interests in the book studies, attending MCL professional development opportunities and trying MCL-based initiatives. "We were excited and said, 'yeah, let's go for it,'" explained Ms. John referencing the prospect of implementing MCL. Equally, every interviewee remains committed to communicating updates with parents and community members. WASD administration and LES staff held book studies on *Inevitable…* (Schwahn & McGarvey, 2012) and "growth mindset" (Dweck, 2006). They attended as many MCL professional development opportunities as possible.

Planning for implementation matched the excerpts from the videos that established how the LES staff envisioned transitioning to and implementing MCL. The LES facilitator presenter explained how they planned to break down WBWs and create flexibility in learners' schedules while focusing on growth and achievement instead of just achievement (Schwahn & McGarvey, 2012).

4.6.2.2 MCL Implementation to Offset Weight Bearing Walls

The first MCL-based initiative happened in the 2015-2016 school year. LES established multi-grade level learners for mathematics in the classrooms of Ms. Doe and other non-interviewed facilitators. Meanwhile, professional development and planning continued. Final plans for 1:1 computing access via School Board approval occurred during the school year. The realignment

of the classroom purposes, common planning rooms, color-coding for rooms and learner name cards occurred during this school year then throughout the summer prior to the 2016-2017 school year. The "I Can…" statements and 12-day learning cycle also occurred throughout the 2015-2016 school year then into the summer months. Planning for these WBWs were among the most detailed to prepare for implementation.

"I Can…" Statements: Ms. Smith, Ms. John and Ms. Doe explained how the facilitators created three levels of "I Can…" statements based on the Pennsylvania Core standards. Ms. Hope worked with a university professor to create a standards progressions chart that aligned with elementary level English-Language Arts (ELA) and Mathematics curricula. Facilitators would each serve as case managers for 12-15 learners. The facilitators/case managers would meet with learners to determine learner-selected "I Can…" statements for ELA and for math. Three statements were academic standards-based and one statement was for a personal goal. The facilitators, in communication with parents, would encourage learners to reach their goals within a 12-day learning cycle (Toshalis & Nukkula, 2012).

12-Day Learning Cycle: The first few days of the learning cycle would be for introduction of standards and increasing familiarity with the "I Can…" statements. Collaboration, personalized activities and standards-related lessons occurred throughout the middle cycle days. The remaining cycle days would be for learners passing their "prove it," or summative assessments that demonstrate mastery of the standards within their "I Can…" statement templates. Throughout the cycle, however, there would be continued flexibility in scheduling. Learners could have the option to "prove it" at any point in the cycle. As Ms. Smith, Ms. John and Ms. Doe explained, the team determined that if learners were able to pass the three "prove it" assessments prior to the end of the cycle then the learners would work on the

next level of their "I Can…" statement. Ms. Hope and the facilitators agreed that the facilitators would analyze data, debrief on learners' progress and begin discussing learner cohort reorganization for the next 12-day learning cycle on Day 8 of each cycle. This later became "Moving Day" and most closely aligned with a Multi-Tiered System of Support (MTSS) process (RTI Action Network, 2016). The facilitators explained that if learners were to not master all "I Can…" statements then the learners would have another opportunity to master the standard in the near future during an upcoming 12-day learning cycle. Hearing the details of the "I Can…" statements along with the 12-day learning cycle linked the information displayed on the white board of the Teams' commons rooms during the onsite visit. The "I Can…" statements and 12d-day learning cycle optimize the flexibility tipping point from personalized learning to MCL (Schwahn & McGarvey, 2012; Schwahn & McGarvey 2014; Toshalis & Nakkula, 2012).

The first year of full MCL implementation occurred in the 2016-2017 school year. Professional development continued after implementation (Creasy, 2011; Thomas & Larwin, 2016). They also had not yet explored modifying the traditional nine-month school year. Learners became and remained actively engaged while attendance and discipline concerns diminished.

According to interviewees and the LES brochure, LES addressed eight specific Weight Bearing Walls. They included: multiple grade levels; classrooms available to multiple learners and facilitators throughout each day; a 12-day learning cycle that reorganized courses and curriculum based on individual learners' needs; "I Can…" statements that learners determined following discussions with their case managers/a facilitator and communication with each learner's parent(s); 1:1 computing access and usage of the Google Classroom platform for

facilitators and learners with a focus on standards-based mastery versus preparations for PSSA testing.

The onsite visit observations confirmed these promoted initiatives. Multiage learners were in the same classrooms. The classrooms did not belong to any particular facilitator or grade level learner. Rather, they were color-coded based on the colors of the rainbow. Facilitators used supply carts for transporting materials to their assigned room for the ELA or Math block. Learners worked on Chromebooks along with handouts. There was a 1:1 student-computer/Chromebook ratio.

Facilitators' means of instruction ranged from large group learning, to small group, to one-on-one support during differentiated instruction, to personalized learning (McClaskey & Bray, 2016). This observation matched the brochure's promotions. Despite the unified ELA Block, one ELA room was focusing on a different activity and approach than that of the other observed ELA class. Both ELA classes, however, were doing activities that aligned with the displayed learning target and what was on their "I Can…" statements.

The "I Can…" statements on learners' papers aligned with content area PA Core Standards as well as their personal goal. The learning focused on mastery versus completion (Schwahn & McGarvey, 2012) through Google Chromebook usage as well as paper and pencil activities. All facilitators called learners by their names and provided encouragement multiple times to try harder during individual activities.

Despite breaking down WBWs and increased active student/learner engagement, achievement and growth on standardized testing at LES remained essentially the same. Both administrators and all three staff interviewees acknowledged this during their interviews. Ms. John spoke of having "favorable scores" prior to MCL that were "sometimes better and

sometimes slightly below" the other two elementary schools. She quickly went back to the staff's commitment to learners being active engaged while reaching mastery levels of curriculum, regardless of their current level. Ms. Doe felt the same, as did Ms. Smith. The administrators were forthright about PSSA scores. In both interviews, the administrators explained PSSA achievement and growth at LES prior to my asking them. Their theme of remaining committed to the MCL principles versus a standardized test focus mirrored the thoughts of the LES facilitator in the videos. It also paralleled my observation of the "I Can…" statements, personalized Chromebook-based activities and non-designated teacher/student classrooms during the onsite visit.

The facilitators explained that their jobs are more intense with planning and knowing the learners. However, their jobs are also now more rewarding. "After doing this for two years, I am not sure if I could go back to a traditional classroom again," explained Ms. Smith. Ms. Doe alluded to how learners have bought into the "growth mindset" (Dweck, 2006) and intrinsically want to reach mastery levels more so now.

Every interviewee elaborated on how learners remain very actively engaged in lesson content since full MCL implementation. Ms. Hope and Ms. Faith explained that student attendance has increased and discipline referrals have decreased substantially. Ms. Hope referenced one learner whom she saw regularly for disciplinary reasons three years ago. Since MCL implementation, the learner repeatedly asks his facilitators to see Ms. Hope for a different reason. He now wants to share that he mastered his "I Can…" statements for the learning cycle and to let her know that he continues to enjoy school.

4.6.3 Transformational Technologies

Along with flexible scheduling, the second way that personalized learning evolves into Mass Customized Learning (MCL) is through transformational technologies, or allowing learning to remain continuously student-centered through online access and technology (Schwahn & McGarvey, 2012). Washington Area School District (WASD) promoted 1:1 computing for all learners. Lincoln Elementary School (LES) was the first school in the district to receive 1:1 computing accessibility via Google Chromebooks. LES used technology access and software to promote and maintain a learner-centered environment that allowed parents, facilitators and learners to know what learners did, how they did it and where were their next steps.

4.6.3.1 Technology Access

Technology access at LES helped manage and communicate information to and for parents, to and for facilitators along with to and for the learners. Each software program served as an interrelated yet specific purpose. Both the WASD and LES websites, along with the LES brochure identify "PowerSchool" served as the main student information system. Though not promoted in the LES brochure or on the websites, onsite visit observations identified access to "Flextime Manager," a software program that electronically identifies learners' location. Google Apps for Education served as the main curricular management system. Despite School Board approvals for and the WASD website promoting access to "Canvas" and "Blackboard" as other curricular management systems, the triangulation of data did not indicated that LES used only the Google Apps of these three resources. PowerSchool, Flextime Manager and Google Apps for Education were LES' prime "learner management systems" (Bulger, 2016).

Lastly, “Empower” served as the main learning management system. However, facilitators and learners also use other online formative assessment resources such as “Discovery Education,” “NWEA Map” and “Study Island” to help analyze data (RTI Action Network, 2016) while transforming learning to a learner-centered approach. Each formative assessment measured links to the Empower data analysis hub. Access to “Empower” helped manage learners’ personal academic and behavioral needs during the school day and throughout each 12-day learning cycle. Empower served as LES adaptive learner system. It promoted a learner’s individual learning proficiency based on his or her data results (Bulger, 2016, Brusilovsky, 2013).

4.6.3.1 Learner-Centered Technology Initiatives

PowerSchool allowed parent, school personnel and learner access to learners’ demographic information, grades, parent contact information, home address, and other secure data. Though identified in each of the data sources, it was not a focal point for any particular source. Similar to capabilities of PowerSchool, Flextime Manager helped facilitators organize learners for 12-day learning cycles. It also identified facilitator and learner locations efficiently while directing both to their correct location throughout each day despite having non-traditional classroom arrangements.

Facilitator interviewees referred to the use of Google Apps for Education software and Empower software on multiple occasions. The learners and facilitators used the Google platform in multiple classrooms and with multiple subjects. Each facilitator praised the accessibility to Google’s educational platform as well as the Empower software. Ms. John explained that data analysis and grouping was a “nightmare” and facilitator teams would “take all weekend” grouping learners for upcoming 12-day learning cycles in the first year. In the second year, the

facilitators entered the data into the Empower software and it identified patterns for the facilitators. The learners then directly benefitted because the groupings were more precise for maximizing individual needs.

All interviewees agreed that the 1:1 computer access at LES was what Ms. John identified as a "game changer" (Bulger, 2016). However, each emphasized that how the facilitators use the technology is what helps implement MCL. The administrators spoke highly of the facilitators' abilities to incorporate technology into lessons and use it as a tool to enhance learning (Bulger, 2016). The facilitators each emphasized that they use technology software for learner efficiency but it does not have to be a part of every lesson. "We still use pencil and paper at times along with technology," stated Ms. John. These findings aligned with the promotion of 1:1 computing access from the LES Brochure and with the observations during the onsite visit. Though the computer access was available and convenient, it was not the focus nor always the sole resource for lessons. Facilitators had a deep knowledge of the curriculum and a strong understanding of each of their learners' needs (Bulger, 2016). Equally, as each of the facilitators explained, technology planning transitioned smoothly into implementation though MCL technology usage in year two was much smoother than year one.

4.6.4 Leadership

The facilitators, the LES principal and central office administrators each fulfill more than one of the five main leadership roles that support the LES Strategic Design (Schwahn & McGarvey, 2014, Schwahn & McGarvey, 2012). Each staff member, regardless of their title, contributed to the LES strategic direction's vision and mission. Each individual throughout the LES staff, the building principal and the WASD superintendent was fully committed. MCL-based professional

development opportunities, including discussions during book studies on "Inevitable…" (Schwahn & McGarvey, 2012) and "growth mindset" (Dweck, 2006), enabled authentic leadership, or the purpose for MCL implementation and visionary leadership, or the vision for MCL implementation.

The administration and staff demonstrated relational leadership, or owning the MCL transition, along with service leadership, or supporting MCL by developing strategic alignment components such as the 12-day learning cycle, the "I Can…" statements. Quality leadership or creating a capacity for MCL implementation occurred through facilitator data analysis and curriculum development as identified in the LES brochure, in the WASD videos and during interviews.

The triangulation of data identified how multiple individuals demonstrated multiple leadership roles during MCL implementation at LES. Facilitators, who double as "Team Case Managers," determine what standards a learner should focus during the 12-day learning cycle. Though the facilitators did not promote learner independence in scheduling, they supported the learners when they self-selected the "I Can…" statements with their respective case manager. Equally, the facilitators forewent their own designated classroom and instead rotated to different rooms to accommodate learner cohorts often during every 12 school days. The LES brochure and onsite visit acknowledged complete staff buy-in and administrator support. All three LES facilitators mentioned support from administration and the building principal.

The superintendent traditionally begins MCL planning and implementation (Schwahn & McGarvey, 2014; Schwahn & McGarvey, 2012; Schwahn & Spady, 2010). This was true at WASD. However, the LES principal has been the keystone figure in planning and implementation. Ms. Hope served as the primary visionary and authentic leader for LES. Her

explanation of MCL planning and implementation clarified the school's MCL-based initiatives while providing facilitators the independence to implement MCL promoted the school's vision and organizational purpose. She created the brochure then included multiple ways for contacting her to discuss MCL. According to Ms. Doe and Ms. Smith, Ms. Hope helps ensure that all stakeholders are involved with MCL implementation. Ms. Faith and she worked with the facilitators to explore the software that would work best for them in helping their learners. They discovered Empower at a MCL National Convention then worked with the representatives to tailor it to meeting the needs of the facilitators and parents. Equally, Ms. Hope creates a monthly MCL progress list that she shares at each faculty meeting. Facilitator interviewees mentioned appreciating the reminder on their progress. The list and discussions also serve as a reminder of what needs to occur next to better benefit MCL implementation and sustainability.

The LES personnel share MCL-based leadership qualities with community members too. For example, the Board member who was present during the onsite visit had the potential to serve as a service leader by supporting MCL implementation. School Board members' approval of MCL-based initiatives, software, professional development and programs in the Board minutes promoted visionary leadership.

Lastly, the PTO and local business donors provided service leadership toward MCL through school supply and monetary donations. On a larger scale, Ms. Hope and Ms. Faith have collaborated with the Gates Foundation to receive grant money that helps promote MCL at LES.

4.6.5 Encountered Challenges

Challenges developed during MCL planning and implementation at LES. The keys to overcoming these initial challenges, however, meant that learners as well as the rest of the

learning community, the school personnel and parents/guardians maintained a growth mindset to ensure that MCL promoted learning for each learner (Dweck, 2006; Schwahn & McGarvey, 2012; Schwahn & McGarvey, 2014; Schwahn & Spady, 2010). The combined data sources analysis identified primary challenges of community and School Board member buy-in, funding concerns and availability of continued professional development. WASD and LES remain steadfast in their efforts to offset these challenges.

4.6.5.1 Community and School Board Member Buy-In Challenges

Challenges to MCL sustainability came from those who tended to know the least about it. Parents of non-LES students tended to voice the same concerns to Ms. Faith at the central administration level and to current School Board members. These individuals were concerned that computers were now teaching LES students instead of the staff. Ms. John and Ms. Doe were particularly upset about this misconception and both shared their disapproval.

A newly appointed School Board member attended the tour the same day as my onsite visit. I overheard her telling some seated nearby that she did not know much about MCL and wanted to get a better idea of implementation. The principal and superintendent made a conscience effort to inquire about questions and/or concerns. Though she appeared to appreciate that morning's observations, I was unsure whether her unfamiliarity and potential skepticism with MCL was an outlier or one of multiple skeptical members. Later interview data analysis revealed that School Board skepticism might be more widespread.

Non-LES parents, staff members who worked in different schools in the district and some current School Board members were creating potential roadblocks. Ms. Hope and Ms. Faith both explained that when MCL planning and implementation began the School Board fully

supported the initiative. However, upon election of new Board members, they became skeptical about MCL's impact on learning through growth and achievement on the PSSA tests.

The PSSA scores at LES remained consistent with MCL implementation as they were before. They were also consistent with WASD's other two elementary schools. As four of the five interviewees explained, increasing PSSA scores was not their goal with MCL. To the contrary, as Ms. Doe described, the learners and facilitators focused on mastery of the standards and, "however far they get before the PSSA's is how far a learner gets." Ms. Hope and Ms. Faith put the PSSA tests in perspective when they both pointed out that it is one test and one snapshot in time. They were more concerned about the whole learner. The MCL process focuses on the whole learner (Schwahn & McGarvey, 2012). Regardless, a commitment to continuously communicating the MCL vision and mission at LES remained a priority due in part to the community perception on PSSA testing and in part to the community's unawareness to MCL. MCL facilitators and administration also needed to maintain a growth mindset (Dweck, 2006) and, as Ms. Faith and Ms. Hope explained, "Not being afraid to admit that they have more to learn." They have done so with the LES parents, who were essentially "all in" as Ms. Faith stated. Ms. Hope and Ms. Atkins echoed Ms. Faith's thoughts.

4.6.5.2 Funding Challenges

Ms. Faith complimented the district's business manager on creatively reallocating funding to help offset potential funding challenges and implement MCL initiatives. WASD leased Chromebooks instead of purchasing them. This allowed monetary savings while providing learners with the most updated Chromebooks every couple of years. Ms. Hope formed a partnership with the Gates Foundation and met regularly with multiple local businesses and the LES Parent-Teacher Organization (PTO) to help garner funding opportunities. The funding from

the local donors provided resources for learners' projects upon demonstrated mastery of multiple "prove it" requirements within each 12-day learning cycle. Equally, there are maintenance costs for technology. Despite these efforts, there were approximately 15 donors total. I overheard the principal telling another visitor that the community donors have been supportive but the school personnel hoped to expand this initiative in the time ahead.

However, funding for the school's physical plant was a bigger concern. Ms. Hope explained that they do the best that they can with maximizing space. However, ideally she would love to see more large-group learning areas. Without a renovation or substantial funding allocations, this will not be possible.

4.6.5.3 Professional Development Challenges

Multiple LES staff and administration acknowledged the challenge of maximizing learning through instructional strategies now that they are implementing MCL. Ms. Hope explained that the LES staff still needed to go deeper with the content and let learners become more independent in their thinking (McClaskey & Bray, 2016). Ms. Smith expressed a great interest in wanting to know how to take her lessons deeper with learners too. Ms. John and Ms. Doe found that, on occasion, they struggled to find sufficient resources that met the needs of learners who have mastered content traditionally reserved for elementary school. They also struggled to keep up with the technology initiatives (Bulger, 2016). The onsite visit revealed the concern for going deeper with instructional strategies. Some facilitators, despite great intentions of wanting to do what was best for their learners, were implementing entry-level instructional strategies. Multiple lessons required learners to recall, identify and recite answers. However, the same learners were not required to compare, contrast or analyze their thoughts in certain classes based on the 10-15 minute observations of each lesson.

Similarly, those who advance beyond the currently offered highest levels of curricula may not have sufficient resources. Though Ms. Hope was exploring options with literacy enrichment programs such as Achieve 3000 as well as collaborating with the district's middle school, a completed curriculum for advanced level learners remained unfinished. The associated professional development, therefore, had not occurred.

MCL-based Professional development challenges, according to Ms. John and Ms. Doe, began with a curriculum director who did not believe in MCL and therefore became a gatekeeper to planning. She no longer worked for the district. Ms. Faith's general statement, "there have been changes on our leadership team but we keep going" alluded to the curriculum director and possibly others for various reasons.

The staff universally agreed and voluntarily stated that their building level along with central office leadership provided "unwavering support" with MCL planning and implementation. Staff and administration attended every available MCL national conference for the past multiple years. They remained members of MCL-based organizations. Staff and administrators spoke with Chuck Schwahn and Bea McGarvey multiple times. The authors have visited LES and remained in constant communication with administration. This was important because the national and organizational conferences were their primary means of professional development (Creasy, 2011).

Yet, few schools in the United States and including those in Pennsylvania implement MCL. Therefore, limited school references exist. The administrators mentioned Lindsay Unified School District in California as a school they referenced. Ms. Hope and Ms. Faith communicated with them often. Reference of Lindsay Unified matched the district website

videos in which the LES facilitator explained how Lindsay Unified served as a prime guide for LES. Still, Lindsay Unified is in California.

Finally, the principal and facilitators mentioned the pitfalls of pioneering MCL in Pennsylvania. They have unwavering administrative support and try to attend as many MCL-related professional development opportunities as possible. This built upon the concepts shared in the website's MCL videos that promoted attendance at MCL national conferences. However, MCL professional development opportunities remain limited due to its newness. This observation matched the statement from the brochure regarding LES' interests in learning from others during implementation (Creasy, 2011; Schwahn & McGarvey, 2014; Schwahn & McGarvey, 2012; Schwahn & Spady, 2010). Equally, it emphasized the interest in a "growth mindset" (Dweck, 2006) despite staff personnel struggling to locate reference topics and/or locations. Lastly, it related to the newness concerns identified in Chapter 3.

4.6.6 Next Steps

Next steps included establishing a clear plan for evaluating MCL during then after a learner's time with the school and/or district (Dweck, 2006; Schwahn & McGarvey, 2012; Schwahn & McGarvey, 2014). Next steps preparations began at LES with a focus on a mathematics cohort while they continued planning and reimagining their classrooms along with their large group learning areas. Triangulated data analysis revealed five next steps toward sustainability: (1) seek funding opportunities, (2) finish an MCL-based Comprehensive Plan/Strategic Design, (3) update the WASD Board Policies to align with MCL, (4) expand MCL districtwide and (5) increase independence opportunities for learners.

4.6.6.1 Funding

During the principal's onsite visit introduction, she explained two funding next steps toward sustainability. First, obtain additional funding through grants and money allocations for non-technology-based, project-based learning (PBL) supplies to allow for individual choice in mastery (Rogers & Rogers, 2016; Boss, 2011). Second, identify means to sustain technology costs and software (Bulger, 2016). Ms. Hope explained during her interview that she planned to meet with representatives from the Gates Foundation regarding a grant that would help support MCL initiatives at LES. Her thoughts matched those of Ms. Faith who alluded to seeking current and new grant initiatives to support MCL expansion.

4.6.6.2 Comprehensive Plan/Strategic Design Completion, Board Policies and MCL Expansion

Beyond funding, Ms. Faith was clear about the immediate next step: finish an updated Comprehensive Plan then get Board Policies established that support MCL. She explained that having written guidelines would help eliminate false perceptions and clarify a MCL direction for WASD.

In addition, Ms. Faith explained that an updated Comprehensive Plan with MCL-based Board policies would then enable MCL expansion from LES to districtwide within 3-5 years beginning with the middle school, then the other two elementary school buildings and finally the HS. When prompted about why the middle school instead of the other elementary schools, she explained that this approach would push MCL to the next series of grade levels and provide learners familiar with MCL to continue this learning process. She explained that the other elementary schools would be after the middle schools to provide the high school some extra time to solidify their current initiatives and better prepare for MCL implementation.

4.6.6.3 Professional Development

All interviewees described the need to continue growing to benefit each other, learners, and learning more about MCL during implementation. Dweck's (2006) "Growth Mindset," referred to within all three data sources, promoted the facilitators and leaders having a positive attitude to offset the challenges while sustaining and developing MCL.

4.6.6.4 Learner Independence

Each facilitator interviewees promoted learners becoming more independent in their academic choices. In Video #3 on the WASD website, the LES facilitator explained the importance of learner independence when discussing with colleagues school management:

> Time management is a consideration and therefore the focus on the ELA or Math skill time allotment within the designated block window is key. As the MCL process evolves, the learners increasingly begin self-selecting time based on familiarity with the MCL process and further understanding by the facilitators for the learners' needs.

However, this would not necessarily include doing assignments at home as per Ms. John and Ms. Doe. Neither emphasized large amounts of homework as a requirement. Learner independence also did not offset a nine-month school year, one of the Weight Bearing Walls (Schwahn & McGarvey, 2012). Ms. Hope shared that kids and staff need that time over the summer to recharge. In addition, the buildings were not air-conditioned.

4.6.7 Washington Area School District/Lincoln Elementary School MCL Progress

Washington Area School District and in particular Lincoln Elementary School made significant strides toward true MCL as identified in the literature. Of the six Focused Concepts components

(see Figure 3), LES implemented two at the MCL level: Leadership and Encountered Challenges. However, following Dweck's (2006) "growth mindset," the school, based on the rubric, was not there yet. They continued working toward complete MCL implementation.

4.6.7.1 Strategic Design

The Strategic Design aligned with the Personalized Learning category for the district and with the MCL category for LES. On the Continuum rubric, the LES MCL-based Strategic Design promotes a learner-centered, future focused approach and is research-based regarding students and learning. The vision statement, mission statement and the Board Agenda topics identified a foundational Strategic Design baseline for schoolwide implementation and future planning. There was flexibility for learners' schedules at an elementary level. However, without a MCL-based Comprehensive Plan/Strategic Design at the district level, WASD was not at the MCL learning level. LES, though, had a Strategic Design with established strategic direction and strategic alignment principles (Schwahn & McGarvey, 2012; Schwahn & McGarvey, 2014).

4.6.7.2 Transitional factors

Transitional factors aligned with the Personalized Learning category. On the Continuum rubric, the Transitional Factors were learner-centered to meet students' academic and behavioral needs. The school planned to address most Weight Bearing Walls (WBW) to meet the needs of the individual learner. Plans were set to continue with current initiatives. The emphasis was on having a Growth Mindset. However, there were no current plans to address the nine-month school year nor the learning happened only in schools WBWs (Schwahn & McGarvey, 2012; Schwahn & McGarvey, 2014).

4.6.7.3 Transformational Technologies

Transformational Technologies aligned with the Personalized Learning category. On the Continuum rubric, technology met students' personal and academic needs during and beyond the school day. The technology-supported student centered learning through content and skills concepts on a personalized basis. There were collaboration and communication opportunities for learners and facilitators. Questions and discussion were increasingly learner generated. However, learners did not yet set their own schedules throughout the day or class (Schwahn & McGarvey, 2012; Schwahn & McGarvey, 2014).

4.6.7.4 Leadership

Leadership aligns with the MCL category of leadership. On the Continuum rubric, the school system could easily identify and explain all aspects of the MCL-based leadership model in its planning. Leaders ensured that the facilitators planned for learners to be at the center of their learning. The leaders planned for sustained growth for the learners and growth for the MCL process. Multiple leaders aligned with and fulfilled all five of the leadership roles (Schwahn & McGarvey, 2012; Schwahn & McGarvey, 2014, Schwahn & Spady, 2010).

4.6.7.5 Encountered Challenges

Encountered challenges aligned with the MCL category. There was a direct alignment between the meeting of the personalized needs of the learner and the Strategic Design. All leadership types worked in unison to address challenges to implementing MCL. Facilitators and administrators maintained a Growth Mindset (Dweck, 2006) along with open lines of communication to help overcome challenges as they arose.

4.6.7.6 Next Steps

Next Steps aligned with the Personalized Learning category. The school district and/or teacher was willing to accommodate students to be at the center of their learning process during the school day and beyond it. Technology was a part of this process and it continued its influence. The school personnel and district made adjustments to promote learning that will meet students' personal needs for success then and in the future. WASD preferred to establish a Strategic Design prior to exploring post-graduation data findings. LES had not yet established learner opportunities beyond the elementary level (Schwahn & McGarvey, 2012; Schwahn & McGarvey, 2014).

4.6.8 WASD/LES MCL Progress Analysis

Three main factors contributed to Washington Area School District (WASD) and Lincoln Elementary School (LES) progressing to Mass Customized Learning (MCL) levels within two of out of the six Focused Concept areas. These factors included time for implementation, leadership stability and scheduling flexibility options.

WASD/LES was in its second year of implementation. It planned for MCL implementation for three years. Comparisons with California's Lindsay Unified School District, one of the MCL-based pioneer schools, and Polk Area School District/Jefferson High School, the other district participant for this qualitative study, prove favorable. WASD/LES progressed at the same pace. This was a good sign that expansion and sustainability may grow at the same rate too.

Leadership stability was not as solid as it could have been at the start of planning. The district's curriculum coordinator did not believe in MCL. This slowed progress as per multiple

interviewees. However, aside of this individual, coupled with the full buy-in from the LES staff, building principal and WASD superintendent, MCL could continue to grow quickly.

Lastly, scheduling at an elementary school was more challenging because there is traditionally less flexibility with scheduling options. Traditionally, elementary schools have one or two options for learners, inclusion and/or cohort pullout. The efforts put forth by the LES staff and principal to be at a personalized level are significant given the implementation timeframe. All implementation measures along with those planned in the near future should help LES and WASD develop to an MCL level as per the Continuum rubric.

4.7 CONCLUSION

The Washington Area School District (WASD) continued to build upon its MCL foundation districtwide and in particular through Lincoln Elementary School (LES). LES initiatives within its Strategic Design, its Transitional Factors, the Transformational Technologies, Leadership, overcoming Encountered Challenges and knowing Next Steps should help sustain MCL at the school level. Sustainability chances should increase as differentiation, individualization and personalization strategies improve (McClaskey & Bray, 2016). WASD's initiatives in the near and distant future will determine MCL sustainability districtwide. Equally, these initiatives should help transition LES and WASD from a personalized learning level to that of an MCL-based personalized learning level as per the Continuum rubric's guidelines.

Chapter 5 explains MCL planning, implementation and progress at the second district location for this study, Polk Area School District (PASD) with a focus on Jefferson High School (JHS).

5.0 CASE STUDY: POLK AREA SCHOOL DISTRICT AND JEFFERSON HIGH SCHOOL

5.1 INTRODUCTION

This chapter describes the Mass Customized Learning (MCL) planning, implementation and sustainability measures for Polk Area School District (PASD) with a concentrated focus Jefferson High School (JHS), the second of the two participating districts and schools in this qualitative study. Triangulation of three data sources, documentation, onsite visits and interviews, identified and explained the six Focused Concepts characteristics in connection with the literature review findings. Identification of data collection sources prelude and help clarify the triangulation of data summaries for each Focused Concept. The chapter concludes with a narrative of the triangulated data from the six Focused Concepts in association with the three overarching qualitative study questions.

5.2 MASS CUSTOMIZED LEARNING SOURCES IDENTIFICATION

Polk Area School District provided multiple resources for the three data sources. Figure 14 (see Figure 14) identifies the data collection sources or information for each procedure. Analysis from each data source and type helped develop the themes.

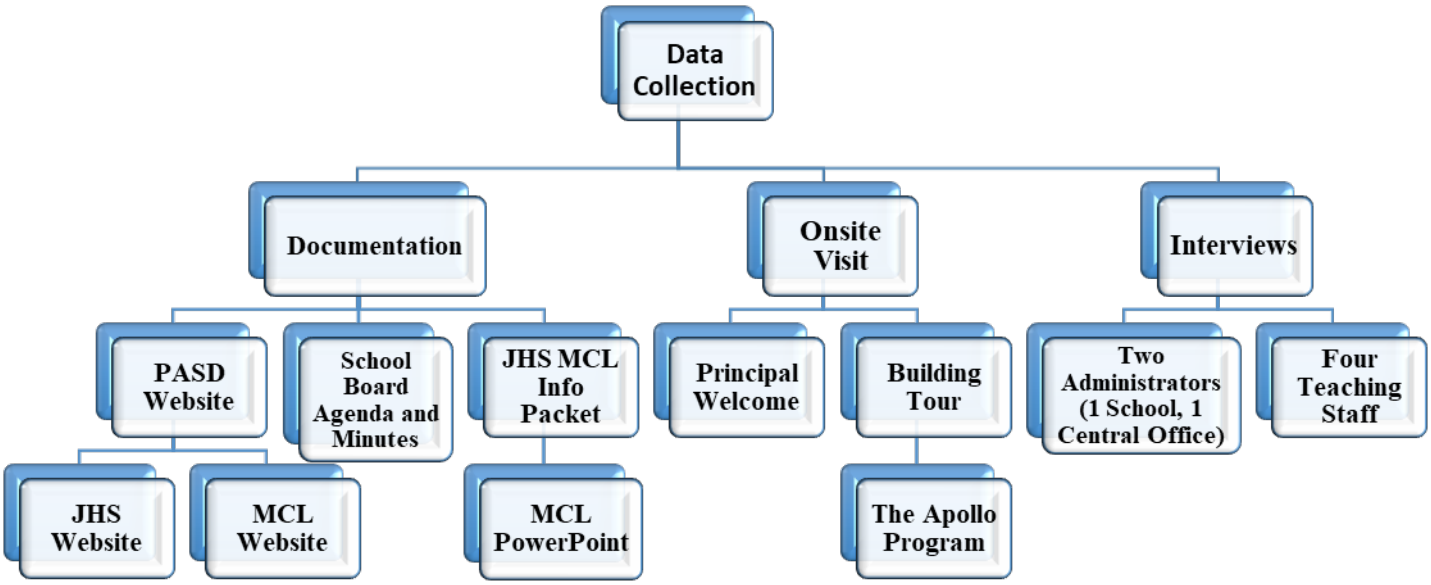

Figure 14. Polk Area School District MCL Sources Identification Chart

5.3 POLK AREA SCHOOL DISTRICT AND JEFFERSON HIGH SCHOOL DOCUMENTATION

PASD/JHS data collection permission began following the conclusion of data analysis procedures for Washington Area School District/Lincoln Elementary School and upon receiving participant written confirmation from WASD's superintendent on January 15, 2018. Documentation collection and coding for Polk Area School District (PASD) and Jefferson High School (JHS) began on February 3, 2018, and concluded on February 9, 2018. It occurred prior

to and informed the onsite visit and interviews while providing valuable written background of PASD and JHS' MCL preparations and implementation.

5.3.1 Polk Area School District Website

Polk Area School District (PASD) referenced MCL numerous times on its main website page through videos, articles and hyperlinked tabs. The numerous MCL-related documentation available on the PASD Webpage provided ample data for documentation coding and analysis in accordance with what Schwahn & McGarvey, 2012, Schwahn & McGarvey, 2014, Schwahn & Spady, 2010). Website documentation acquired for review provided the first data source for multiple Focused Concepts Graphic sections. Equally, it further established the foundation for understanding how Polk Area planned and implemented MCL. Highlights included:

- Videos that identified the current MCL approach at the secondary level, the future MCL approach at the primary level and staff feedback on MCL implementation at PASD.
- Tab options included "Our District," "Our Schools," "Parents and Families," "Community," "School Board," "Employment" and "What's New." The "Our Schools" tab provided a hyperlink to the district's middle school, the five elementary schools, an in-district preschool, the district's cyber academy and Jefferson High School.
- Quick Links options for students, staff and community, including School Board minutes.
- A hyperlink to the Polk Area MCL Website, its Ecosystem (see Figure 15) and its Blog, promotion of its cyber snow day initiative along with community book readings.

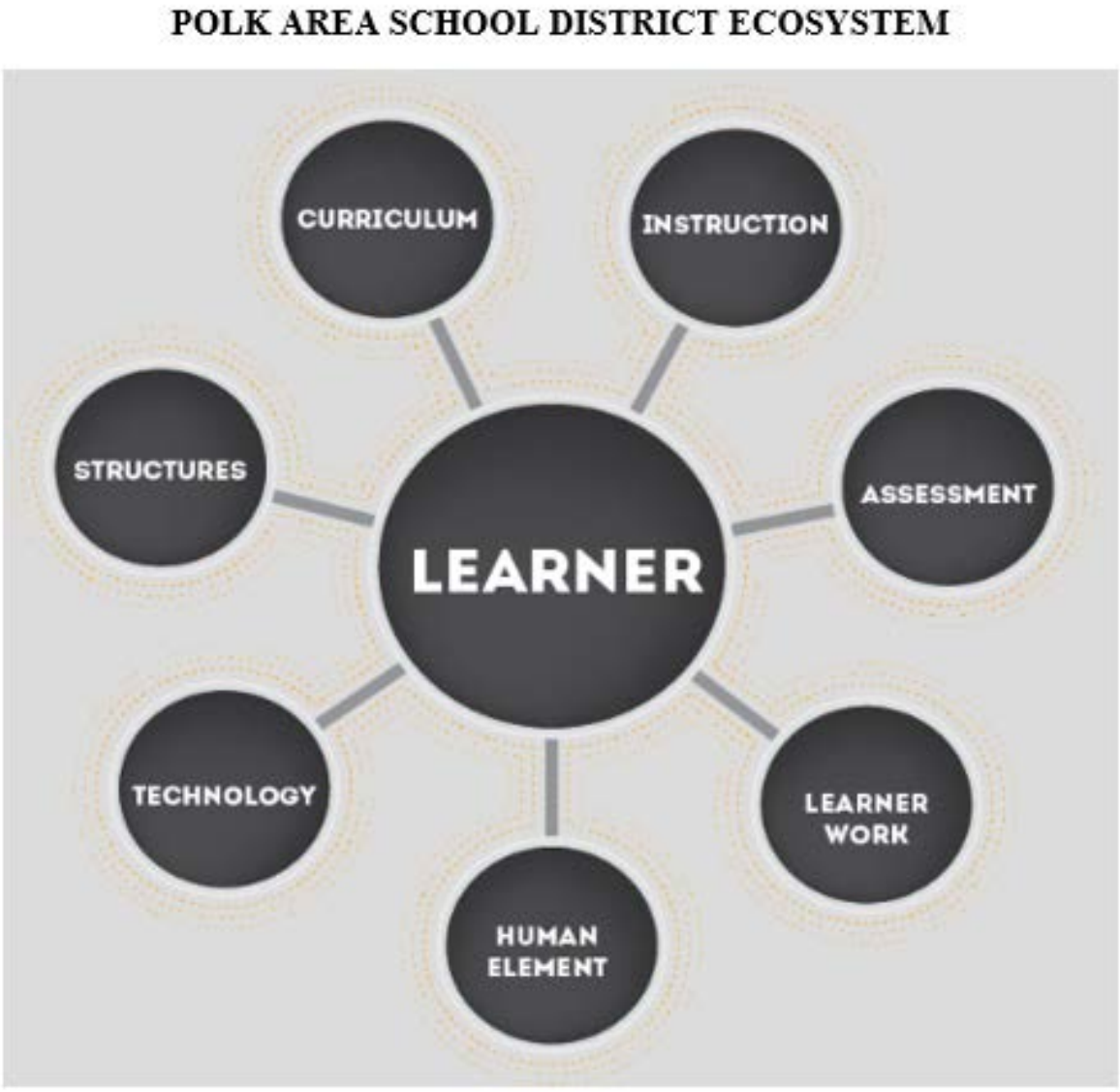

Figure 15. Polk Area School District Ecosystem

5.3.2 Polk Area Board of Directors Policies, Agendas, Minutes and Information

The Polk Area Board of Directors documentation section was coded separately too because of the documentation source and associated initiatives. Highlights included:

- Featured Board information, Meetings, Board Policies and Board Meetings agendas, displayed in school years were available from the 2009-2010 school year through the current one.
- Board policies, updated as of 2014, alluded to MCL initiatives.
- The 2014-2017 Comprehensive (Strategic) Plan. The Comprehensive Plan's "Action Plan" section associated directly with MCL ideals and district initiatives. Reference to the school personnel's familiarity with "Inevitable…" by Schwahn and McGarvey (2012) was on Page 69.
- A hyperlinked invitation to participate in 2018-2021 Comprehensive Planning.

5.3.3 Jefferson High School Webpage

Access to Jefferson High School's (JHS) webpage provided additional documentation data during the analysis of relationships among intervening variables phase of documentation data analysis (Miles, Huberman & Saldaña, 2014). Key features included:

- Technology promotion and communication via a Quick Link that led to a parent resource hub.
- Resources for students, for staff and for parents/families.
- MCL-related content hyperlinks about curriculum and technology. For example, one hyperlink explained what the school identified as customized pathways, including the Apollo, self-learning initiative.

5.3.4 Polk Area Mass Customized Learning Website

The PASD MCL Website was comprehensive with districtwide information. MCL-based information included:

- A welcome tab that provided a video from the high school principal.
- A vision tab identified and overviewed the hyperlink to Polk Area's Blog, Comprehensive Plan, Mission/Vision/Values and "Ecosystem," or how they provided customization for students, or learners. The Ecosystem top row provided automatic scrolling options for the Our Learner, Curriculum, Instruction, Assessment, Learner Work, Human Element, Structures and/or Technology aspects of their Ecosystem. Each option provided additional information of the features within the main Ecosystem characteristic upon scrolling over the term. The Blog, Comprehensive Plan and Mission/Vision/Values each promoted MCL.
- A Journey tab that overviewed how the school shifted toward MCL initiatives within its Ecosystem's main aspects.
- A Communication tab that provided a summary of and hyperlinks to MCL-based PowerPoint presentations, community book readings, town meeting dates and information along with access to its weekly Blog, "The Road Less Traveled," by the school superintendent.

5.3.5 Polk Area School District/Jefferson High School Mass Customized Learning Information Packet

The JHS MCL information packet, received during the day of the onsite visit, contained MCL-related resources that included:

- A flyer with the word "Apollo" at the top. The statement under Apollo read, "A customizable fusion of Art, English and Social Studies." Four subcategories, time space, pace and place summarized Apollo's setup. Bulleted points under time included self-scheduled day, open to close, semester and Grades 9-12. Bulleted points under space included one-on-one appointments, self-selected workplace, 1: World, flexible learning environment and learner-designed space. Bulleted points under pace included project-based, passion-based, readiness through accommodation, mini-lessons offered/requested, learners as facilitators and mastery learning. Bulleted points under place included thinking and soft skills-based curriculum, global input, community outreach and standards-connected. The names of the facilitators and email along with website links were at the bottom center. The school's logo was the bottom left. The Apollo Program assessments focus on reaching mastery level versus completion. The facilitators develop a capacity for independent learning by allowing the individual learner to set personalized goals, progress toward these goals and then self-reflect (McClaskey & Bray, 2016).
- The Jefferson High School "Learner Agency Continuum" (see Figure 16). This continuum, created by the JHS principal, displayed a rubric for what various levels of instructional practice looks like for implementation of curriculum, instruction and assessment. The type of agency features ranged from regulated through ideal. This template highlighted what Toshalis and Nakkula (2012) would describe as all four of the

learning process stages. "Ideal," the highest level on the continuum, identifies MCL-based initiatives for curriculum, instruction and assessment at JHS (Schwahn & McGarvey, 2012).

Learner Agency Continuum

Type of Agency	Curriculum	Instruction	Assessment
Ideal	Learner selects area of study that connects to their individual learning/ career goals. The learning facilitator mentors the learner to choose rigorous skills, resources, and content to explore.	The learning facilitator mentors the learner through their mastery of the skills selected, the discovery of the content, and provides guidance on their authentic assessments.	The learner selects an authentic project that will allow them to demonstrate mastery of the skills selected. The learning facilitator evaluates feedback from the learner's selected audience (local and global), evaluates the level of mastery, provides additional feedback, and allows for the learner to resubmit in order to demonstrate the highest levels of mastery.
Rich	Learning facilitator provides the themes that will establish direction for the learners. The learner chooses rigorous resources and content that is relevant to their interests and learning/ career goals under those assigned themes.	The learning facilitator provides mini-lessons around the leanring outcomes/ skills to facilitate understanding. The learning facilitator then mentors the learner's self-directed learning experience. The learning facilitator coaches the learner through their discovery of the selected content ensuring all selected skills are addressed.	Learners choose how to demonstrate mastery of the learning outcomes/skills through agreed upon authentic assessments. Learners have the opportunity to resubmit in order to demonstrate the highest levels of mastery. The learning facilitator evaluates the level of mastery, provides feedback, and supports the creation of a local audience in order to receive additional feedback.
Established	Learning facilitator provides the learning outcomes/skills required for a particular unit/ theme. The learning facilitator and learner chooses rigorous resources and content that is relevant to the learner's interests and learning/ career goals under that assigned unit/ theme.	The learning facilitator provides mini-lessons around the leanring outcomes/ skills to facilitate understanding. Small group and individual instruction continues while others proceed with their learning.	Learners are provided examples of assessments that meet the learning facilitators requirements but are provided the opporunity to design their own authentic assessment that still meets the requirements.
Evolving	The learning facilitator establishes the curriculum but allows learners opportunities for discovery within the set parameters.	Learning facilitator plans for equal time for both direct instruction and time for learners to explore within the preselected learning outcome or skill/ theme.	Assessments are designed to allow for learner choice within the specified framework of the rubric.
Regulated	The learning facilitator establishes the curriculum. The learner has no choice in the learning outcomes, skills/ themes or content to be covered.	Learning facilitator plans for regular daily instruction but allows some time for discovery within the prescribed learning outcome or skill/ theme. The learner can explore within the prescribed curriculum at designated times.	Assessments are well defined with a rubric and allows learners to select from a predetermined list of projects or have nominal choice through project rubrics. ©Ryan Caufman

Figure 16. Jefferson High School Learner Agency Continuum

- A paper version of the Jefferson High School Highlights 2017-2018 displayed on the Programs and Initiatives option under About Us from the JHS webpage. The content included the JHS Vision, the mission, the core values, identification and explanation of each of the five learning options. The remaining four pages informed readers of the flexible, individualized learning options such as dual enrollment, flex scheduling details, clubs information, internships/job shadowing, Science-Technology-Engineering-Mathematics (STEM) summit information, Student Assistance Program (SAP), seminar support classes, pre-apprentice programs and the PTO-sponsored Stellar Student rewards program. The last page identified accomplishments within the academics, the arts and the athletics in bulleted format. The last bulleted point read, "Over the last 2 years, 50 plus school districts have visited our high school to gain insight of how we customize for each of our learners." The highlights emphasized flexible scheduling, one of the two main features that Schwahn and McGarvey (2012) identify as tipping points from personalized learning to MCL.
- "The Ideal Learning Experience" at Polk Area School District. Six checkmarks preluded what each PASD learner should expect: (1) is met at his/her level of learning; (2) is using one of his/her best learning styles; (3) is learning skills and concepts with content of high interest to him/her; (4) understands the relevancy of what he/she is learning; (5) is challenged and successful and (6) looks forward to coming back tomorrow. The reverse side of this template displayed the PASD "Ecosystem," or the seven MCL characteristics that surrounded students/learners in the middle circle of what are critical elements of a Strategic Design (Schwahn & McGarvey, 2012; Schwahn & McGarvey, 2014).

- A packet on the "Library and Learning Hub." Contents of pages included the vision and mission of the Hub, its three phases for transitioning what was a traditional library arrangement to its current state, what the Hub will offer, 21st Century Learning ideals and a summary of how the Hub was now a "maker's space" because of the flexibility in space and opportunities there.

5.3.6 Polk Area School District/Jefferson High School Mass Customized Learning PowerPoint Presentation

The 32-slide PASD/JHS PowerPoint presentation, also received at the day of the onsite visit, summarized the key features of MCL at JHS. Highlights included:

- The MCL core beliefs, then the planning and implementation processes including information on the five types of learning options.
- Information on the Apollo Program
- Multiple video clips from the building principal and various facilitators promoted MCL ideals and learning options details at JHS.

5.3.7 Focused Concept Areas and Documentation Data

Written documentation analysis set the foundation for the triangulation of data analysis regarding how Polk Area School District planned for and then implemented MCL at Jefferson High School. The onsite visit data and analysis helped develop and frame the emerging themes within each Focused Concept area upon the triangulation of data.

5.4 JEFFERSON HIGH SCHOOL ONSITE VISIT

Collected researcher notes and observations during the onsite visit to Jefferson High School (JHS) on February 6, 2018, provided evidence of Mass Customized Learning (MCL) implementation. They also provided insight to JHS' daily MCL operations. The solo onsite visit followed a review of the available documentation. Onsite visit coding occurred immediately after the visit. Several findings helped the coding process:

- The PASD Mission Statement that read, "The Polk Area School District is committed to providing educational opportunities through which ALL learners strive to achieve their full potential."
- A 10-minute introduction to MCL at JHS and PASD by the acting building principal.
- A keepsake folder of MCL visual aids for my reference during the introduction.
- Explanation of the considering factors, or the district's "Stump Speech" points for MCL at JHS. These points included students learning at different rates, having different learning styles, technology as a game changer and the importance of relationships (Basye, 2014; Bulger 2016). The district put a heavy focus on having its students be information and future ready versus industrial and test ready. They should be able to do something with what they learned versus just remembering that they learned it. They aligned directly with the literature findings on MCL (Schwahn & McGarvey, 2012; Schwahn & McGarvey, 2014; Schwahn & Spady, 2010).
- An overview of the PASD ideal learning experience. This information, included in paper version among the other information packet items, emphasized the school's goals for each learner.

- An explanation of the Learner Agency Continuum. The expectation from the building principal, Mr. Roosevelt described, was for all facilitators to elevate their teaching levels one level on the rubric for this school year, regardless of where they may be currently (Toshalis and Nakkula, 2012).
- An overview of the district's "Ecosystem." Mr. Roosevelt spent extra time discussing the technology factor. The district identifies three parts of technology for MCL implementation. The district uses "Skyward" software for the Student Information System (SIS), Schoology software for the Learner Management System (LMS) and Watson software for its Global Positioning System (GPS) (Bulger, 2016). The SIS, LMS and GPS all play vital technological roles in MCL implementation. The principal stated that technology of any kind is only a factor in their Ecosystem and not at the center. Human elements and relationships remain of utmost importance too. The ideals of the Ecosystem, particularly with the "Human Element," aligned with the competency-based model and key stakeholder groups information identified by AIR (2013). The Ecosystem helps learners through accommodations in multiple ways and work together to ensure support for learners during and beyond the school day (AIR, 2013).
- An overview of the five learning options, traditional, self-paced, online course, project/passion-based and the Apollo Program. Each of these learning options fit into a one hour and fifteen minutes block scheduling arrangement. A Period 5 the "flex block" follows the final two blocks for each regular school day. The flex block provides enrichment and/or remediation time opportunities. Facilitator/learner meetings, counselor/learner meetings and individual work time occurs then. Period 5 provides additional learner schedule flexibility (Schwahn & McGarvey, 2012). Period 5 provides

learners the option to start their day later yet have course offerings following the regular school day's end.

- A 15-minute summary of the Apollo Program's principles (See Figure 17, Figure 18 and Figure 19), its facilitators and the social studies, art and English content areas. The Apollo Program is the district's ideal MCL opportunity that offset many of what Schwahn and McGarvey (2012) identify as a traditional school's ABC grading, grade levels, students assigned to classrooms, class periods/bell schedule, courses/curriculum and textbooks Weight Bearing Walls. Apollo has learners with Individualized Education Plans (IEPs), regular education learners and Gifted IEP (GIEP) learners similar to other 4 learning options. The learners grade levels range from a traditional Grade 9-12. Grades are standards and mastery based. The learners create their project's rubric with guidance from the facilitators. There is a four-hour timeframe in the morning in which learners focus on one or all of the Apollo content areas. "Schedoole.com," the software that the facilitators and self-motivated learners use to arrange their learning for each day maximizes facilitator and learner time. I noted for possible interviews the Apollo Program facilitators' names and Apollo facilitator positions.

Figure 17. What is Apollo?

Figure 18. How Apollo Learners Build Projects

Figure 19. How Apollo Learners Build Project Skills

- Learner elaborations time regarding their personal learning experience (McClaskey & Bray, 2016). Each briefly expressed the alternative approach to learning, the challenges, the flexibility and their typical school day during Apollo and in a more traditional learning environment. The alternative approach highlights included doing projects that included cross-curricular topics of art, social studies and English. The challenges included overcoming the depth of knowledge that their facilitator wanted them to produce for their project and creating a finished product that included all three content areas (McClaskey & Bray, 2016). They mentioned to Mr. Roosevelt and me that it was difficult to transition back to the regular school setting after Apollo finished for the day

because of the independence and different approach to Apollo. All spoke candidly about their JHS experiences, reiterating the details of Apollo that Mr. Roosevelt shared with me moments prior.

- Banners attached to walls that displayed fundraisers and motivational signs asking students how they want remembered and remember the 2017-2018 school year.
- A second floor with multiple seating and student work areas at various locations in the open areas and along the walls.
- The high school's Library and Learning Hub (See Figure 20). The Hub transitioned from a traditional library a few years prior as the high school transitioned into MCL. A tech support area, as recommended by a Penn State University advisory team, better maximized the space that included small computer working stations throughout the Hub, rows of computer stations to the back right, multiple seating areas with different types and colors of couches, chairs and benches along with technology plugin capabilities almost every station or seating area. A student-led help desk counter and designed locations for promoting learning and extracurricular activities. Approximately 300-400 more students used the Hub daily after versus before changes for technology, for studying and/or for collaborating with peers as per the librarian.
- A Green Room, or audio/visual media room that students used to complete projects for any of the five learning options. The Green Room recently received new software for learners to create videos. The area was as facilitating in space as it was with staff beyond what traditionally constitutes a high school library. The HUB aligned with what Bulger (2016) would identify as space for an adaptive Learning approach. The accessibility to

and usage of software capabilities transition the individual learner from a passive participant to the collaborator among the educational process (Bulger, 2016).

Figure 20. Jefferson High School Library and Learning HUB

- Limited amounts of lockers in hallways. If students want lockers, they use them. JHS personnel did not assign lockers. Students could lock them if they would like. Students carried backpacks or materials with them throughout the day. However, with the technology capabilities, students typically did not bring a backpack to school.
- The Apollo Learning Center wing that included a center seating or commons area, an art double room (See Figure 21), a separate art-based regular sized classroom, a separate room for learner collaboration. In the middle of the wing was a large group meeting room. Learners new to the Apollo opportunity this year met with facilitators for "Apollo family" meeting time. The learners actively led the discussion, facilitators seated in a circle-style seating arrangement with the learners. There was a Socratic seminar regarding learner progress, questions, next steps for maximizing learning opportunities and individual project discussion (Bulger, 2016; McHugh, 2005).

Figure 21. The Apollo Program Classrooms Area

- Introductions to Mr. Draw, the Apollo Art facilitator Mr. Page, the Apollo Social Studies facilitator and Mr. Will, one of Apollo's English facilitators. The Apollo Program's enrollment grew from 38 learners last year to 80 learners this year, preluding possible sustainability to explore with interviewees.
- A tour of the facilitators' planning area that included six working station areas, each with a teacher's desk and filing cabinets along with bins at each station. Two large tables centered in different places in the middle of the area for collaboration and planning purposes. This arrangement created flexible spacing without adding renovation costs to the building (Schwahn & McGarvey, 2012).

5.4.1 Focused Concepts Areas and Onsite Visit Data

The onsite visit observations and field notes built upon documentation findings in the six Focused Concepts areas. They generated inquiry thoughts for expanding upon during interviews. The onsite visit data helped further clarify MCL planning and implementation at Jefferson High School.

5.5 INTERVIEWS DATA AND FOCUSED CONCEPTS AREAS

The Polk Area School District (PASD) semi-structured interview data collection followed the same process as that of Washington Area. Two administrator interviews and four teaching staff interviews occurred between February 6 and February 19, 2018. For the purposes of this study, and to reassure anonymity, each interviewee received a pseudonym. All Polk Area School District (PASD)/Jefferson High School (JHS) participants received an inquiry to recommend additional interviewees as part of the "snowball" sampling technique (Crossman, 2017) prior to the end of each interview. To help frame the Focused Concepts while providing a more reliable and fluid interview, all interviewees received prior access to the six Focused Concept summary (see APPENDIX D), the interview consent form (see APPENDIX E) and either the administrator or non-administrative staff semi-structured interview templates (see APPENDIX F and APPENDIX G).

5.5.1 Administrator Interviews

There were two administrator interviews. The first administrative semi-structured interviewee was Mr. Roosevelt. The first of two interviews occurred in person on February 6, 2018 and the second occurred on February 19. The second administrator interviewed was Mr. Kennedy. I interviewed him on February 8:

- Mr. Roosevelt, the Jefferson High School acting building principal, gave permission to be audio recorded prior to the start of both interviews. Mr. Roosevelt, a multi-decade educator and long veteran administrator with experience in Virginia as well as Pennsylvania, gave detailed responses that built upon his onsite visit introduction and

alluded directly to the six Focus Concepts during both interviews. Following the first interview, he recommended that I speak with any of the school's facilitators at the Apollo Program that I met the day of the onsite visit. He also suggested pursuing an interview with Mrs. Claire, another of the Apollo English and regular education teachers for whom I had not met, to gain a better insight of MCL implementation. Mr. Roosevelt shared additional feedback following our first interview during the second interview. Following the second interview, Mr. Roosevelt did not share additional feedback.

- Mr. Kennedy, the PASD superintendent, gave permission to be audio-recorded prior to a phone conference interview. Mr. Kennedy, a multi-decade educator and substantial experience serving in a leadership role, provided thoughts that alluded to PASD as much as Jefferson High School (JHS). He was very knowledgeable with all WASD and JHS MCL features. He suggested speaking with Mr. Roosevelt, the JHS acting principal, and the Apollo Program facilitators at JHS. Mr. Kennedy did not share additional feedback following our second interview.

5.5.2 Staff Interviews

There were four teaching staff interviews. All interviews were via a phone conference. All interviewees gave permission to be audio recorded prior to the start of his or her interview. The first staff semi-structured interview occurred with Mr. Will on February 9, 2018. The second interview occurred with Mrs. Claire on February 16. The third interview was with Mr. Draw also on February 16. The final staff interview occurred with Mr. Page on February 19:

- Mr. Will, an Apollo Program facilitator whose expertise subject was in English, gave permission to be audio-recorded during a phone interview. Mr. Will, a multi-year

educator in the district and an adjunct professor in the evenings, was thorough in his explanations of the Apollo Program and MCL at Jefferson High School (JHS). He recommended that I speak with any of the Apollo facilitators for additional thoughts. Mr. Will did not share additional feedback following our interview.

- Mrs. Claire, an Apollo Program facilitator whose expertise subject was English, was a multi-year educator in the district was in her first year of working within the Apollo Program. She was the only staff member interviewed who transitioned between Apollo and one or more of the other four learner path options. She also gave detailed answers for questions associated with the Apollo Program and the other four learner learning options. She recommended that I speak with the other Apollo facilitators and possibly the PASD administration for their insight. Mrs. Claire did not share additional feedback following our interview.
- Mr. Draw was an Apollo Program facilitator whose expertise subject was Art, was a multi-decade educator in the district, found the transition to MCL easy based on his teaching approach prior. However, he also learned a lot from his Apollo colleagues and gave answers that supported his learning along with the ideals of the Apollo Program. He recommended that I speak with any Apollo facilitators for their insight. Mr. Draw did not share additional feedback following our interview.
- Mr. Page, an Apollo Program facilitator whose expertise subject was Social Studies, was also a multi-decade educator in the district. He took a very active role in planning for then helping implement the Apollo opportunity. His responses provided affirmation of Mr. Roosevelt's thoughts during the onsite visit introduction. He knew that I spoke with his colleagues from Apollo along with Mr. Roosevelt. Therefore, Mr. Page did not have

any additional individuals to whom I should speak. He did not share additional feedback following our interview.

5.5.3 Interview Data and Triangulation Within the Six Focused Concepts

The interview data further developed themes from the documentation and onsite visit findings. Interview findings and analysis provided the final data source for the triangulation of data. Equally, it helped solidify emerging themes from the six Focused Concepts.

5.6 TRIANGULATION OF DATA: THE SIX FOCUSED CONCEPTS AND QUALITATIVE STUDY QUESTIONS FINDINGS

The triangulation of documentation, onsite visit and interview data built upon the findings as each individual data source identified alignment with the other two. Links in the coded information became narrative phrases and developed into themes through the Triangulation of data (Miles, Huberman, and Saldaña, 2014; Saldaña, 2009; Woods, 2011). Triangulation of the data identified and explained findings within the six Focused Concepts (see Figure 2). Recall that the six Focused Concepts are the key planning and implementation influences present in MCL that contribute to this qualitative study.

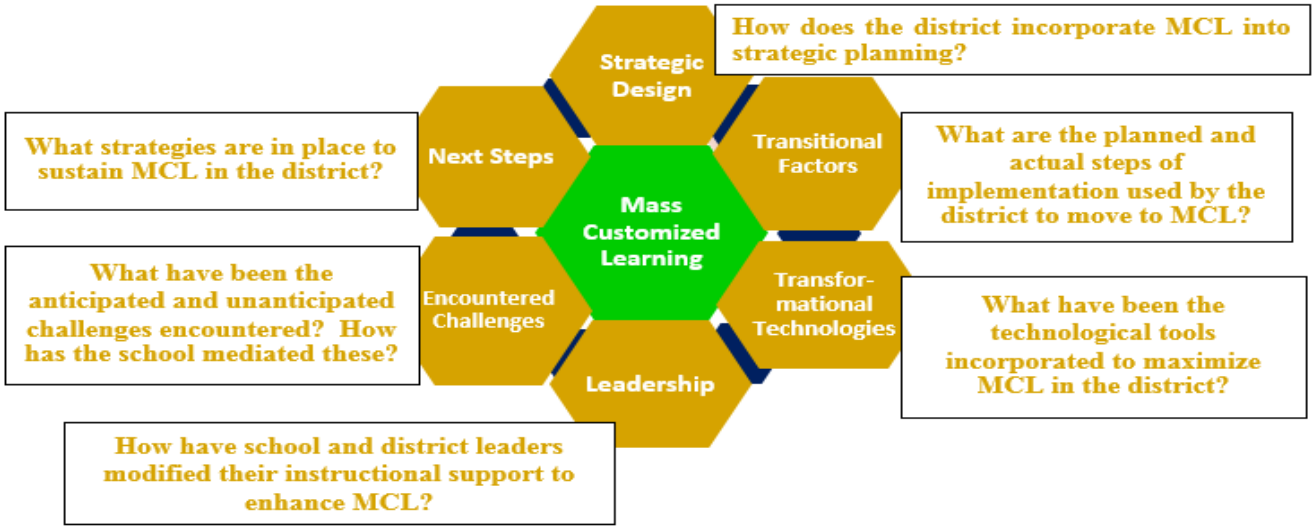

Figure 2: Six Focused Concepts Present in MCL Planning and Implementation

In addition, the triangulated data, along with the review of literature findings, helped answer all three questions associated with this qualitative case study. Equally, it also identified how and why PASD/JHS determined how MCL was the preferred educational approach for their learners compared to the findings in the literature. The findings of the first research question, "What considerations led to the adoption of Mass Customized Learning in the two schools?" and the second research question, "How is Mass Customized Learning being implemented and evaluated in the two schools?" developed answers to the third question, "How does the implementation align with the Mass Customized Learning model?"

5.6.1 Strategic Design

Triangulation of data revealed a well-established Strategic Design at Polk Area School District (PASD) and Jefferson High School (JHS). Equally, each component of the district's strategic direction and strategic alignment followed what the literature explains should entail the Strategic

Design. JHS also adhered to the district-level Design in both its strategic direction and strategic alignment (Schwahn & McGarvey, 2012: Schwahn & McGarvey, 2014). It identified flexibility of learning options and technology capabilities for learners. Equally, JHS and PASD communicated their Strategic Design ideals through human resources, through social media and in written form.

5.6.1.1 Polk Area School District Strategic Design

Strategic Direction: The PASD mission statement is, "The Polk Area School District is committed to providing educational opportunities through which ALL learners strive to achieve their full potential." The district's mission statement aligned with the JHS statement to "provide customized educational experiences to foster a culture of innovation and discovery."

Each interviewee emphasized the importance of adhering to the district's core values identified on the PASD website and in the JHS Highlights packet: Learners learn at different rates, learners learn in different styles and technology changes the rules of how/when we can learn. Mr. Kennedy and Mr. Roosevelt elaborated that having in writing the vision, mission and core values is essential because it provided a blueprint for success and establishes clear communication about MCL (Bulger, 2016; Schwahn & McGarvey, 2012; Schwahn & McGarvey, 2014).

Their thoughts aligned with the visibility of the mission statement at various locations in JHS, at multiple locations on the district's website and on the current Comprehensive Plan displayed in Board Docs. They also aligned with the concepts shared in the PowerPoint presentation and items from the information packet during the onsite visit. Mr. Roosevelt and Mr. Kennedy explained that established strategic direction components help nullify the

"naysayers" or the "20 percent of those who are reluctant to buy-in" to initiatives while communicating with the community, parents, teachers and students.

Strategic Alignment: The 2014-2018 PASD Comprehensive Plan supports MCL in its action plan's goals, measurement for the goals and strategies for obtaining a customized approach for each learner. It references the book, "Inevitable…" (Schwahn & McGarvey, 2012), as the primary resource. However, according to Mr. Kennedy and the district's website, "Why School?: How Education Must Change When Learning and Information Are Everywhere" (Richardson, 2012) was the original foundational strategic alignment reference. "Why School?..." helped align Comprehensive Plan committee members to the mindset that the school model had to change. The School Board minutes indicate that the approvals of MCL-based processes such as technology infrastructure with 1:1 computing capabilities for students in Grades 7-12, technology upgrades in the HUB and approval of the five learning options occurred shortly after the establishment of the current Comprehensive Plan.

In alignment with AIR's (2013) "Key Stakeholder Groups," all interviewees repeatedly referred to the importance of communication with the community, with the learners and with each other to help with maintaining the MCL mission. Mr. Kennedy helped ensure alignment of MLC by directing all administrators districtwide to have an annual communication goal. MCL alignment continued through social media such as blogging and Twitter, both displayed on the district's website. The MCL webpage link elaborated on several district and building wide initiatives in written and video format at PASD. This included all contents from the packet received from Mr. Kennedy during the onsite visit. Removing lockers and reorganizing the library into the Library and Learning HUB provided organizational structure changes to align the MCL vision, mission and core values to the policies and processes (Schwahn & McGarvey,

2012). Mr. Roosevelt summarized PASD's thoughts about strategic alignment when he said, "At the end of the day, it's hard to argue the why behind MCL and we continue to look for ways" to sell why MCL does and should occur.

5.6.2 Transitional Factors

PASD and JHS planned for and implemented several steps to move to MCL. JHS is in the process of offsetting all ten Weight Bearing Walls (WBWs): (1) grade levels; (2) students assigned to classrooms; (3) class periods/bell schedules; (4) courses/curriculum; (5) textbooks as the sole resource; (6) a paper and pencil-based learning and assessments (7) an ABC grading system; (8) report cards as the sole student progress provider (9) learning happens in schools and (10) offsetting the nine-month school year (Schwahn & McGarvey, 2012).

JHS findings identified that about 80 percent of the JHS staff was interested in exploring MCL initiatives. The top 20 percent of this majority were fully committed to exploring options for learners including what would become the Apollo Program. However, 20 percent of the staff preferred to remain in a more traditional school approach. Regardless, book studies on "Inevitable…" (Schwahn & McGarvey, 2012) and "Why School?..." (Richardson, 2012), attendance at MCL professional development opportunities along with leadership team mandates helped with the school's planning and preparations for MCL implementation.

5.6.2.1 MCL Planning to Offset Weight Bearing Walls

Prior to MCL at PASD/JHS, students chose between traditional settings with a limited basis online option for school. The facilitators acknowledged that some of their colleagues were fine with this approach. Mr. Page admitted that the traditional model allowed for easier lesson

planning “but I didn’t feel like I was getting through to all students.” For teachers, differentiating instruction from a common lesson plan did not require data analysis and continuously looking at individual students’ needs (McClaskey and Bray, 2016). Mr. Will and Mrs. Claire alluded to this point too. Mr. Kennedy noticed that students were not as engaged at the high school when conducting walkthrough observations.

Despite these acknowledgements, not all JHS staff agreed with MCL. Instead, as Mr. Kennedy and Mr. Roosevelt identified, about 20 percent of the staff were all-in, 60 percent were agreeable to exploring the option and the remaining 20 percent were opposed to modifying current practice. Therefore, as Mr. Will and administrator interviewees confirmed, JHS administration instituted a top-down approach to planning for MCL for those not initially interested. They added all teachers to a MCL-aligned committee. Meanwhile, administration and staff interested in the change worked together to explore options beginning as far back as 2008 but gained additional momentum annually through 2013-2014 school years. In these years, initiatives such as project-based learning provided an alternative means for assessing learning (Rogers & Rogers, 2016) and blended learning approaches that provided traditional face-to-face time with that of online or out-of-class time (University of Washington Buthell, 2017). 1:1 or 1:World, as JHS referenced 1:1 computing access, provided technology access for every learner and learning through application (Rogers & Rogers, 2016) advanced individualized and personalized learning options (McClaskey & Bray, 2016). Other initiatives included the PASD Cyber Academy in which students worked interactively with their teacher and/or the cohort’s students throughout a designated online schedule (Clark, 2008).

Through multiple meetings written foundations and action plans for MCL implementation occurred. Community town -based monthly book studies and meetings by Mr.

Kennedy promoted and communicated the district's commitment to MCL. PASD/JHS staff and administration and community representatives helped establish written foundations via a MCL-aligned Comprehensive Plan and the district's "Ecosystem." Establishment of flexible learning options at JHS and enhancing technological opportunities also helped prepare for implementation.

Action plans included attending MCL national conferences and participating in two book studies, one on "Inevitable…" (Schwahn & McGarvey, 2012) and the other on "Why School?..." (Richardson, 2012).

The district based MCL preparations on its "Stump Speech" philosophies: we all learn at different rates, we have different styles, technology has changed the game and relationships rule supreme." Therefore, teachers became facilitators and students became learners. However, Mr. Roosevelt and Mr. Kennedy emphasized that there was never any intention to "throw the baby out with the bathwater" meaning that a traditional learning path would remain an option for students and teachers. They firmly believed that the point of MCL was to provide flexibility for learners. It was not, as Mr. Roosevelt stated, "Swing the pendulum the other way" by telling learners that they had to learn in a different way that they still may not prefer.

5.6.2.2 MCL Implementation to Offset Weight Bearing Walls

Building wide MCL-based initiatives occurred at the start of the 2014-2015 school year with promotion of learner "voice and choice." Learner voice and choice affiliated directly with the range of ideals from individualized learning opportunities through self-regulation theory (Toshalis & Nakkula, 2012). As per interviewees and onsite visit findings, JHS addressed all but three Weight Bearing Walls (WBWs) during this school year. Learners had learning options. In addition to the traditional path, there were self-paced and online options. Learners

did not have to learn solely in school and in a classroom. Learners had options for multi-grade level learning via elective courses. A flex block added to the bell schedule created options for learners to seek support and/or enrichment. Some facilitators, such as Mrs. Claire, implemented aspects of MCL in years prior to building wide implementation. She started small by conducted MCL-based lessons by using literature circles and eventually built toward personalized "Genius Hour" projects, or projects that learners created because they had a passion for the topic.

Professional development continued during implementation (Thomas & Larwin, 2016). Facilitator committees formed to develop MCL initiatives. The building level administration finalized their "Learner Agency Continuum" with intentions to share it with staff the following school year. The MCL webpage developed. Mr. Kennedy's town meetings continued. Lastly, planning for the Apollo Program began.

Learner opportunities continued to expand beyond JHS' first year of MCL implementation. As 1:1/1: World capabilities developed and more facilitators became invested in course flexibility, learner options increased. Project Based Learning (PBL) options developed as courses in addition to units in courses (Boss, 2011). Online hybrid course offerings expanded. Currently learners could select from 15 different elective and/or core course offerings. Learners enrolled in self-paced courses worked with facilitators to meet at varying intervals during a week and on a need-to-meet basis. Mr. Roosevelt and Mrs. Claire explained that this allowed learners to focus more on subjects of interest in high school while meeting course requirements toward graduation. JHS now offered 21 self-paced courses ranging from electives to core classes.

In addition, the JHS website's course offerings confirmed Mr. Roosevelt and Mrs. Claire thoughts regarding flexible course offerings. For example, there was a transition to English

academic leveled courses versus English grade level courses, thus creating flexibility with when learners took a course during their high school years. There were five learning options: First was traditional, or what daily face-to-face learning within the same designated timeframe. Second was self-paced in which a learner receives information from a facilitator and then paces his or her learning to align with the curricular and assessment deadlines (AIR, 2013). Third was an online course option (Clark, 2008). Fourth, was project or passion/based learning (University of Washington Bothell, 2017) art courses. The fifth option was the Apollo Program.

The Apollo Program: The Apollo Program, first implemented in the 2015-2016 school year, added a dimension of flexibility and learning options. Three facilitators, three content areas, open enrollment for any high school learner, PBL approach, relationship-centered, mastery learning, thinking skills driven and community minded. Mr. Page initiated the initiated with Mr. Will. They worked with administration for a couple of years to develop the details of this initiative.

The onsite visit's PowerPoint presentation explained the concept and Mr. Roosevelt and the facilitator interviewees then reinforced it. Learners would build, create and/or design cross-curricular projects from customized information learned. Their personalized and finished product would follow the "ideation, incubation, innovation and realization" expectations. Each project required an alignment with established thinking skills, soft skills and Pennsylvania Core Standards. These requirements aligned with the district's "Ecosystem" and Mr. Roosevelt's thoughts that the "human element remains supreme." They also aligned with the Technology-Enabled Personalized Learning Summit's five measures that associated with MCL ideals (Friday Institute for Educational Innovation, 2014; Schwahn & McGarvey, 2012).

All interviewees agreed that discipline concerns have decreased and learners embrace the flexible scheduling options. These thoughts matched onsite visit observations in which learners actively engaged at tables in the hallways, in the HUB and in the Apollo Program's instructional areas. The Apollo facilitators alluded to having zero discipline issues and very active learner engagement. On occasion, according to Mrs. Claire and Mr. Will, learners frequently inquired about what else they could learn about a topic once they became familiar with program expectations. Mr. Roosevelt reported that truancy concerns decreased. Performance on the Pennsylvania Keystone Exams, as per the School Performance Profile, remained steady over the past three school years. Regardless, administrators and facilitators remained determined to continue with MCL, including the Apollo Program, at JHS.

5.6.3 Transformational Technologies

Polk Area School District (PASD) considered technology a four-pronged process that included infrastructure, software, hardware and equality. To promote equality, PASD offered 1:1/1: World computing for all Grades 7-12 learners via a MacBook or i-Pad. Therefore, all Jefferson High School (JHS) learners received 1:1 computing accessibility. JHS facilitator interviewees and Mr. Roosevelt matched the thoughts of the PASD's Ecosystem webpage: technology access was a "game changer" (Bulger, 2016). JHS used technology as a student information system (SIS), a learner management system (LMS) and a "Global Positioning System" (GPS) or using technology to analyze a learner's academic progress (Bulger, 2016). Polk Area Cyber Academy, the district's Cyber School, piloted blended learning options prior to full MCL implementation at JHS.

5.6.3.1 Technology Access

PASD/JHS used "Skyward" software as its "Student Information System" (SIS). Skyward, according the PowerPoint presentation and PASD website, provided access to student demographics, attendance, grades, secure data, class performance data such as report card or current quarter grades and contact information. Another SIS is "Flextime Manager," a scheduling system that provided accountability and locations for all learners throughout the day. Flextime Manager helped limit the amount of class tardiness and class skipping concerns, according to multiple interviewees.

Schoology was the universally used LMS (Bulger, 2016). The onsite visit observations and district website promoted its purpose. Facilitators posted assignments or projects, course content, reminders for learners, educational platforms and social learning in alignment with a course. Learners accessed this software anytime from anywhere.

Lastly, the district's GPS was through a grant-funded partnership for "Watson." Watson was what Bulger (2016) would identify as an adaptive learning system. Its data warehousing system stored specific data points on each learner then helps diagnose each learner's academic needs by identifying deficiencies and strengths.

5.6.3.2 Learner-Centered Technology Initiatives

Skyward helped promote home-to-school partnerships and communication. The documentation data promoted its usage more so than the facilitators and administrators. They focused more on the usefulness of Flextime Manager as it applied to day-to-day operations of learner opportunities. With the Apollo program, Mr. Draw alluded to Schedoole.com as a valuable software tool also.

Frequently, learners in Apollo had questions. He was one of three facilitators for almost 40 learners. To maximize learners' time, he used Schedoole.com to set appointment dates, times and timeframes. Learners received a notification via email and/or their cellphones. Mr. Draw received a meeting request notification and planned accordingly. Learners do not have to lose instructional time while waiting for facilitator availability.

The usage of Watson projected as the biggest "game changer," according to Mr. Roosevelt. The software served as an "electronic physician" for all 2017-2018 Grade 7 learners. The district chose current Grade 7 students because this was the lowest grade level for 1:1 technology access and, if all goes as planned, facilitators and administrators could compile up to six years of data on each Grade 7 learner prior to graduation. This technological advancement would then help personalize learning further through identification of curricular gaps and learner interests to determine appropriate academic path options.

5.6.4 Leadership

Triangulation of data identified that MCL at PASD is a team approach despite not having 100% buy-in during planning. The leadership began with Mr. Kennedy. Mr. Kennedy, a lifelong learner who "loves reading educational books," began the process toward MCL implementation by reading "Inevitable…" (Schwahn & McGarvey, 2012). Inspired by the book's content and philosophies, he demonstrated authentic leadership and visionary leadership by promoting MCL to the PASD School Board and leadership team because he believed, "it was the way that education should be." He continued to demonstrate service leadership through his town meetings, his promotion of book studies with community members and his leadership team. He led planning meetings that resulted in an approved, MCL-based Comprehensive Plan/Strategic

Design. Equally, he demonstrated relational leadership by advocating that his leadership team had ownership over MCL at the buildings districtwide. Mr. Roosevelt alluded to his relational leadership when referencing the annual MCL communication goal that is a part of each administrator's evaluation.

Several members of his leadership team, Mr. Roosevelt and the JHS principal who was on active military leave included, promoted MCL at their respective buildings while promoting quality leadership. Mr. Roosevelt's approach with the Apollo Program facilitators allowed them to be service Leaders for the learners, for parents, for community members and for visitors. They essentially owned the Apollo Program and invested heavily in ensuring its sustainable success. In the past school year, their quality leadership (capacity), service leadership (support) and relational leadership (ownership) expanded when Mrs. Claire began working with the Apollo facilitator team. The Apollo facilitators appreciated the ownership. Mr. Will, Mr. Page and Mr. Draw all elaborated on the mutual support that they provide each other and receive from administration to move the Apollo Program forward. In addition, they felt comfortable implementing the soft skills requirements and the thinking skills that related to PA Core standards but also encouraged learners to work toward deeper learning.

The facilitators and Mr. Roosevelt mentioned multiple leadership domain opportunities for any staff member during professional development days. All JHS facilitators, when not fulfilling the Pennsylvania Department of Education mandated trainings, had a MCL-based menu of options. Facilitators could choose to attend a session and/or facilitate a session that aligns with JHS MCL initiatives. Mr. Roosevelt explained that over 20 workshops were available during their full day MCL professional development opportunity last school year (Creasy, 2011; Thomas & Larwin, 2016). However, should a staff member not choose one of the various

options, administration provided a “voice of choice.” Facilitators could instead create their own MCL professional development and, upon admin approval, have a customized learning opportunity (Bulger, 2016).

School Board initiatives demonstrated visionary leadership in planning through the approval of the PASD’s MCL-based Comprehensive Plan, technology access and initiatives, through approval of professional development and MCL programs such as Apollo. On a larger scale, the Pennsylvania Department of Education, led by Governor Tom Wolf, approved grant “seed money” for the district to implement the usage of Watson.

5.6.5 Encountered Challenges

Challenges developed during MCL implementation. Challenges included community buy-in, funding, building the Apollo Program and developing independent learners. Interviewees repeatedly advocated for maintaining a commitment to MCL while communicating the vision and mission has or will help overcome encountered challenges (Schwahn & McGarvey, 2012; Schwahn & McGarvey, 2014; Schwahn & Spady, 2010).

PASD maintained open lines of communication and a commitment to their MCL vision. Presentations at the School Board meetings and during open house evenings and/or town meetings as planning developed helped offset challenges with MCL due to unfamiliarity. Funding for resources shifted to MCL-based needs.

5.6.5.1 Community and School Board Member Buy-In Challenges

Community members remained skeptical at times due to unfamiliarity with MCL purposes. Mr. Kennedy and Mr. Roosevelt emphasized the key to maintaining open lines of communication.

Administrators are required to send one "Tweet" on Twitter per week. Social media, the district and MCL websites and video clips have also helped promote understanding. However, Mr. Kennedy's book study and town meetings provided an outside-of-the-box approach. Town meetings dates and times remained visible on the PASD main webpage. Mr. Kennedy acknowledged that the meetings are enlightening because they helped clarify district and building wide initiatives.

5.6.5.2 Funding Challenges

Administrator interviewees referenced the cost of Watson then discussed the grant money that associated the initiative. However, there was not a clear plan identified for how hidden costs such as professional development for implementing Watson would occur. Equally, the grant money was likely going to end. How the district personnel reallocated funding will be key to maintaining one of the three main aspects of MCL-based technology at PASD. Mr. Kennedy emphasized that they would continue to work as a team and adhere to their Ecosystem to offset funding concerns. Mr. Will and Mr. Page agreed that they take a team approach to encountered challenges, funding or otherwise.

5.6.5.3 Apollo Program Challenges

Multiple data sources identified two main challenges for Apollo. The first challenge is to grow the program. The Apollo program's first year provided MCL, PBL to only learners in Grades 11 and 12. In the 2017-2018 school year, it expanded to include Grades 10, 11 and 12 learners in the first semester. In the spring semester, Grade 9 learners could join. There continued to be a steady enrollment. However, the challenge remained to maintain and possibly boost enrollment numbers in the upcoming years. Mr. Draw and Mr. Page believed that expanding advertisement

into the middle school could be beneficial. Mrs. Claire recognized that Grade 9 learners sometimes do not enroll in Apollo if their friends did not enroll despite Apollo's MCL approach.

Second, facilitators needed to continue growing with the learners (Darling-Hammond, 2005). In its first year, Apollo facilitator Mr. Will and Mr. Page envisioned that learners would naturally be driven to succeed and generally regular education-level learners. The challenge of having struggling readers quickly brought realization that the learners could bring a wide variety of foundational reading abilities. The facilitators offset this challenge by getting to know the learners academically and behaviorally while making them feel a part of the Apollo family (AIR, 2013). Facilitators conducted "family meetings" to at the beginning of each semester then periodically throughout the term. They found that this promoted better knowledge of learners and increased comfort levels.

Finally, learners enrolled in the Apollo Program struggled with meeting the soft skills of communication and time management. Therefore, facilitators required learners to pick one of the soft skills for which they would like to develop. Then, they focused their selected project's topic on the selected soft skill. Mr. Draw cited an example of a learner who wanted to complete a project on the Mongolian Empire. He asked a facilitator to select a soft skill, naming empathy. He then asked the learner to contextualize an empire other than that of the Mongolians but determined the project with empathy at the center of the concept. This approach, according to Mr. Draw, developed the soft skills in a more meaningful way.

5.6.5.1 Learner Independence

The triangulation of data identified the increased challenge of changing learners' mindsets from complete dependency on the teacher or facilitator to independent learning. Multiple facilitator interviewees and Mr. Roosevelt shared the challenge as one that consistently gives learners

trouble. Mr. Roosevelt recalled the reason for why the human element is so important. The last bulleted point of the district's "Stump Speech," relationships rule supreme, helped build a foundation for learner confidence through guidance and support (Toshalis & Nakkula, 2012). Learners, in time and with guidance, embraced the "I can do this" versus "I remember that" information-based learning.

5.6.6 Next Steps

Next steps toward sustainability included improving on current districtwide MCL initiatives, expanding MCL-based professional development, creating additional and effectively gaging post-graduate success. During MCL consideration phases, JHS staff implemented project based learning and online learning while revamping their library and hallways spaces prior to full MCL implementation that included the Apollo Program. During implementation, the focus shifted from expanding to solidifying their MCL process and effectively gaging post-graduate success.

5.6.6.1 Solidifying MCL at JHS and PASD

The district leaders and facilitators agreed that PASD and JHS needed to solidify current initiatives. The website and Mr. Kennedy alluded to MCL foundational developments at the elementary school level. Each interviewee agreed that there were many great MCL initiatives at JHS. Learners had five different learning options. The Apollo Program continued to develop and expand. Their thoughts paralleled my observations and more so the documentation findings. Mr. Kennedy and Mr. Roosevelt identified how their Ecosystem and technology process with student information systems, learner management systems and global positioning

systems continued to solidify. The Watson software, for example, had potential to be an excellent initiative.

Mrs. Claire believed that refining scheduling options for learners would create more flexibility as MCL develops. Multiple interviewees believed that continued professional development through collaboration remained essential for MCL sustainability. To quote Mr. Kennedy, "We need to get better at what we are doing."

However, similar to other relatively new MCL initiatives, it will take time and effort to develop its effectiveness and allow for facilitator, parent, learner and community buy-in. To help aid efforts, district and school subcommittees met monthly to create action plans in support of MCL efforts aligned with the five main Ecosystem areas. Subcommittee meetings engaged all district and community stakeholders in the conversations. Reports of meeting activities and progress toward MCL occurred internally and externally.

5.6.6.2 Effectively Gaging Post-Graduate Success

Schwahn and McGarvey (2012; 2014) explained that MCL sustainability includes having a clear plan for evaluating MCL during then after a learner's time with the school and/or district. Mr. Kennedy and Mr. Roosevelt agreed with this thought. However, both also agreed that social, environmental and other factors beyond a school district's control, along with multiple years after high school graduation, created difficulties for validating post-graduate success rates (AIR, 2013).

Therefore, JHS recently began focusing on graduates who are 6 months into college or post-graduate endeavors versus multiple years out of high school. They believed that this would improve response rates, helped post-graduates more easily associate their high school experience with comparisons to post-graduate and provided the district with clearer next steps data to

improve their MCL-based infrastructure. According to Mr. Kennedy, this new initiative will take a couple of years to build data trends but this approach should prove more effective. Regardless, he firmly believed that education is "as great as it has ever been and we are heading in the right direction" despite occasional bad publicity to the contrary. He also acknowledged that PASD and JHS have not arrived yet (Dweck, 2012). He, as with Mr. Roosevelt, believe that PASD and JHS will arrive at complete MCL when they can completely customize for every learner.

5.6.7 Polk Area School District/Jefferson High School MCL Progress

Polk Area School District (PASD) and Jefferson High School (JHS) was closer than WASD to implementing true MCL as identified in the literature. Of the six Focused Concepts components, JHS is implementing all six at the MCL level (Strategic Design, transitional factors, Transformational Technologies, Leadership, Encountered Challenges and Next Steps).

5.6.7.1 Strategic Design

The Strategic Design aligned with the MCL category. The PASD and JHS MCL-based Strategic Design promoted a learner-centered, future focused, research-based approach regarding students and learning. The website and Board minutes supported schoolwide implementation and future planning. The interviews and onsite visit confirmed alignment with the documentation data. There was flexibility of learners' schedules at the high school level along with A MCL-based Comprehensive Plan/Strategic Design at the district level and building levels (Schwahn & McGarvey, 2012; Schwahn & McGarvey, 2014).

5.6.7.2 Transitional factors

Transitional factors aligned with the MCL level on the Continuum rubric. They met students' academic and behavioral needs. The school planned to address all Weight Bearing Walls (WBWs) to meet the needs of the individual learner. Plans were set to continue with current initiatives. The five learning options provided flexibility and, collectively, covered all WBWs (Schwahn & McGarvey, 2012; Schwahn & McGarvey, 2014).

5.6.7.3 Transformational Technologies

Transformational Technologies aligned with the MCL level for this Focus Concept. On the Continuum rubric, Technology met the students' personal and academic needs during and beyond the school day. The technology existed as a support for student-centered learning through student-generated scheduling, instructional approaches and timeframes. Learners set their schedule with multiple learning option paths and with the Flex Block near the end of the school day (Schwahn & McGarvey, 2012; Schwahn & McGarvey, 2014).

5.6.7.4 Leadership

Leadership aligned with the MCL level. On the Continuum rubric, the school system could easily identify and explained all aspects of the MCL-based leadership model in its planning and implementation. Leaders ensured that the learners planned for learners to be at the center of their learning. The leaders planned for sustained growth for the learners and growth for the MCL process. Multiple leaders aligned with and fulfilled all five of the leadership roles (Schwahn & McGarvey, 2012; Schwahn & McGarvey, 2014, Schwahn & Spady, 2010).

5.6.7.5 Encountered Challenges

Encountered challenges aligned with the MCL level on the Continuum Rubric. There was a direct alignment between the meeting of the personalized needs of the learner and the Strategic Design. All leadership types worked in unison to address challenges to implementing MCL. Facilitators and administrators maintained open lines of communication with learners, colleagues, and community members to help overcome challenges.

5.6.7.6 Next Steps

Next Steps aligned with the MCL level. There was a direct alignment between accommodating the personalized needs of learners with the Strategic Design. All leadership types worked in unison to address challenges to implementing MCL. The school system used data to identify how MCL benefitted its learners in the current year and through post-graduation. PASD had an established Strategic Design. It had an established data collection system for post-graduates.

5.6.8 PASD/JHS MCL Progress Analysis

Three main factors contributed to Polk Area School District (PASD) and Jefferson High School (JHS) progressing to Mass Customized Learning (MCL) levels within six out of the six Focused Concept areas. These factors include time for implementation, leadership stability and scheduling flexibility options.

PASD/JHS is in its fifth year of implementation. It planned for MCL implementation for four years. Comparisons with California's Lindsay Unified School District, one of the MCL-based pioneer schools, prove favorable that they could sustain their MCL initiatives.

Leadership stability continued to be solid during the MCL planning and implementation phases. Though 20% of the JHS staff opting not to buy-in to MCL slowed progress as per multiple interviewees, 80% of all staff, the JHS principal and PASD superintendent were committed to sustaining and growing. Eighty percent included all Apollo Program staff members.

Lastly, scheduling at a high school is less challenging than that of an elementary school. There is traditionally more flexibility with scheduling options due to course options and educational paths. However, the efforts put forth by the JHS staff and principal to be at a MCL level are significant given the implementation timeframe, size of staff and student-related attributes since implementation. All implementation measures along with those planned in the near future should help JHS and PASD sustain an MCL level as per the Continuum rubric.

5.7 CONCLUSION

The Polk Area School District (PASD) had a solid MCL foundation districtwide. Jefferson High School was multiple years into building wide MCL. Comprehensive communication, commitment and maintaining a learner-centered approach toward MCL and within their Strategic Design, Transitional Factors, Transformational Technologies, Leadership, overcoming Encountered Challenges and knowing Next Steps should help sustain it. PASD and JHS' abilities to solidify their many initiatives in the near and distant future will determine MCL sustainability districtwide. Equally, these initiatives should help maintain JHS and WASD at an MCL-based personalized learning level as per the Continuum rubric's guidelines.

Through the planning and implementation analysis of MCL at PASD/JHS, several common themes emerged from the triangulation of the six Focused Concepts data. Chapter 6 identifies and expands on these emerging themes from the six Focused Concepts from both schools then explains how they align with the Conceptual Framework.

6.0 FINDINGS

The Conceptual Framework in Chapter 3 identified six Focused Concepts. The first four Focused Concepts (Strategic Design, Transformational Factors, Technological Transformations and Leadership) associated heavily with Schwahn and McGarvey's (2012) seven-step process of essential elements for MCL planning and implementation considerations. Encountered Challenges and Next Steps, though emphasized less than the other four Focused Concepts, were equally important to implementation among the six Focused Concepts. Comparison of data across the Conceptual Framework's Focused Concepts in Chapter 4 and Chapter 5 revealed cross-case themes and alignment within multiple Focused Concepts.

6.1 CONCEPTUAL FRAMEWORK FOCUSED CONCEPTS

Schwahn and McGarvey (2012, 2014) claim that MCL builds upon personalized learning by adding the essential characteristic of making learning the constant and time the variable while the learner remains at the center of the process. To explain the theory behind this characteristic, the authors cited a specific, seven-step process that a school system should have in place prior to implementing MCL. These critical, planning or pre-implementation elements mean that a school system: (1) has derived a strategic design; (2) has written curriculum as learner outcomes; (3) has categorized learner outcomes by learner format; (4) has created and placed learner outcomes

online; (5) has created opportunities for learner outcomes that require an interactive seminar format; (6) has designed and implemented scheduling technology for the individual learners and (7) has designed and implemented accountability technology for administration. This multistep process cited specific examples for how MCL would implement a continuously personalized approach with variable timeframes.

Similarly, the Strategic Design, Transitional Factors, Transformational Technologies and Leadership Focused Concepts aligned with the seven-step process characteristics required for MCL implementation. Each Focused Concept proved essential and equal. In addition, they helped identify the characteristics of the Encountered Challenges and Next Steps Focused Concepts for each selected school. In turn, all key focus areas helped identify emerging themes findings essential to MCL sustainability.

6.1.1 Strategic Design

A Strategic Design establishes the foundation for planning and implementation. It is learner-centered, future-focused and based on the best research regarding students and learning. Its two key components, the strategic direction and the strategic alignment, assure the student/learner is at the center of the decision-making (Dweck, 2006; Schwahn & McGarvey, 2012; Schwahn & McGarvey, 2014). This aligns with MCL preparation Steps 1-3 (a derived a strategic design, a written curriculum as learner outcomes and has categorized learner outcomes by learner format) because it sets the foundation within a school system for ensuring that learners at the center of every decision. Equally, a Strategic Design ensures that the learner has a voice in the decision-making process. Instead of a school system creating a Strategic Design and then curricula in

which learners have minimal or no input in how they would master the content, putting the learner outcomes at the center of both areas creates learners' interest and value.

6.1.2 Transitional Factors

Transitional Factors identify how a school system has moved from a more traditional learning approach to one that implements MCL by eliminating the traditional educational approaches that prevent learner-centered opportunities. Schwahn and McGarvey (2012) identified these traditional learning approached "Weight Bearing Walls" (WBWs). The 10 WBWs included: (1) grade levels; (2) students assigned to classrooms; (3) class periods/a bell schedule; (4) traditional courses/curriculum; (5) textbooks; (6) paper and pencil learning; (7) ABC grading system; (8) report cards; (9) learning happens only in schools and (10) a nine-month school year.

These WBWs concepts helped school personnel understand the reason for why the district transitioned to MCL. Equally, they identified how the professional development measures contributed to or will contribute to MCL implementation. Additionally, staff could articulate how students were intrinsically motivated during school, in accordance with the Pennsylvania Core Standards, and how funding contributed in the transition to and continuance of MCL.

Transitioning from a traditional model to one that is MCL-based required creating written curriculum that learners could actively help design. Educational structures would need designed then implemented that allowed for interactions in a seminar format as possible. For example, at Lincoln Elementary School (LES), the "I Can…" statements and 12-day learning cycles provided learner-centered, actively engaging learning opportunities. The five learning paths at

Jefferson High School (JHS) provided opportunities for interactions in a seminar format with the learners helping design their educational paths.

6.1.3 Transformational Technologies

Transformational technologies aligned directly with MCL preparation Step #6 (a school system having a designed and implemented scheduling technology for the individual learners) and Step #7 (a school system having a designed and implemented accountability technology for administration). Scheduling technology systems allowed learning to remain continuously student-centered through online access and technology at both Lincoln Elementary School (LES) and Jefferson High School (JHS). The teachers/facilitators, the students/learners and their parents collectively determined the learner's rate of learning via the "Prove It" opportunities in association with the 12-day learning cycles and the "I Can…" statements. Parents could access their child's learning records or portfolios, get tips on how to help their child and/or view the entire set of the school's learner outcomes at both LES and JHS.

The student information systems technology enabled learners at both schools to self-generate a personalized plan though JHS was further along in this endeavor than LES. Learners, with help from their learning coach and parents, schedule their activities, seminars, online instruction opportunities and community learning experiences at both locations. The school leaders used the same technology, Flextime Manager, to track individual progress and locations throughout the day. It provided accountability for school staff, administrators, students and parents. Both school districts' personnel based all technological decisions and purchases on the positive impact the technology would have on their learners (Schwahn & McGarvey, 2012).

6.1.4 Leadership

Leadership serves as an extension of the Strategic Design and technology accountability, implementation preparation. Step 1 and Step 7, respectively. Those in the position to align a learner-centered education greatly help prepare for MCL implementation once they establish a school's foundational plan then incorporate accountability among multiple individuals. In addition, allowing these multiple individuals opportunities to demonstrate leadership help plan for and implement MCL with fidelity.

Beginning with the superintendent of schools, each of the five leadership types (authentic leaders, visionary leaders, relational leaders, quality leaders and service leaders) develop as part of strategic direction and the strategic alignment (Schwahn & McGarvey, 2012). Lincoln Elementary School (LES) and Jefferson High School (JHS) promoted all individuals serving as leaders of one or more types. All were of equal and essential importance. Without each working effectively, high quality MCL would not have occurred (Schwahn & McGarvey, 2012; Schwahn & McGarvey, 2014; Schwahn & Spady, 1998; Schwahn & Spady, 2010).

6.1.5 Encountered Challenges

Both school systems explored and identified challenges associated with planning for and then implementing MCL. The school/learning community used a team approach where leaders worked together to offset the challenges of meeting each learner's needs during implementation. The students/learners as well as the rest of each school's learning community remained committed to implementing MCL and providing a completely learner-centered education. The three main encountered challenges at both schools were professional development barriers,

funding concerns and School Board along with community skepticism regarding MCL. However, the school personnel remained committed to their Strategic Design and thus helped ensure that MCL promoted learning for each learner (Dweck, 2006; Schwahn & McGarvey, 2012; Schwahn & McGarvey, 2014; Schwahn & Spady, 2010).

6.1.6 Next Steps

The Next Steps Focused Concept incorporated all of Schwahn and McGarvey's (2012) preparatory steps to MCL implementation that developed a futuristic, sustainable MCL path during implementation. Both schools intended to solidify their Strategic Design and its ideals. Both school systems/learning communities clearly identified their next steps toward sustainability and growth of staff/facilitators, students/learners, parents and community through professional development, funding opportunities, expansion and solidifying current implementation measures. Polk Area School District (PASD) had a clear plan and implementation for evaluating MCL during and after a learner's time with the school and/or district (Dweck, 2006; Schwahn & McGarvey, 2012; Schwahn & McGarvey, 2014). They used technology to help develop their process through their available student data software systems in planning then during implementation.

6.1.7 Conclusion

The review of literature by Schwahn and McGarvey (2012), including critical elements that needed established prior to MCL implementation, served as the basis for identifying the six Focused Concepts within each school. Individually and collectively, the Focused Concepts

findings helped explain how MCL planning and implementation occurred at LES and JHS. From the implementation findings of the Focused Concepts, emerging themes developed that aided as a means for MCL sustainability.

6.2 CROSS-CASE EMERGING THEMES

Coding of narrative phrases and themes (Hahn, 2009; Miles, Huberman, and Saldaña, 2014; Saldaña, 2009; Woods, 2011) aligned with one or more of the six Focused Concept areas from both schools. The analysis across documentation, onsite visit and interview data from the two-school setting produced agreement as findings from each data source aligned in relation to the Focused Themes concepts. Seven themes emerged across data: (1) Commitment, (2) Communication, (3) Flexibility, (4) Funding, (5) Growth Mindset, (6) Professional Development and (7) Technology Capabilities. Figure 22 presents the emergent themes along with each theme's definition and descriptions (see Figure 22). Each emerging theme aligned with one or more of the six Focused Concepts. Each is discussed below.

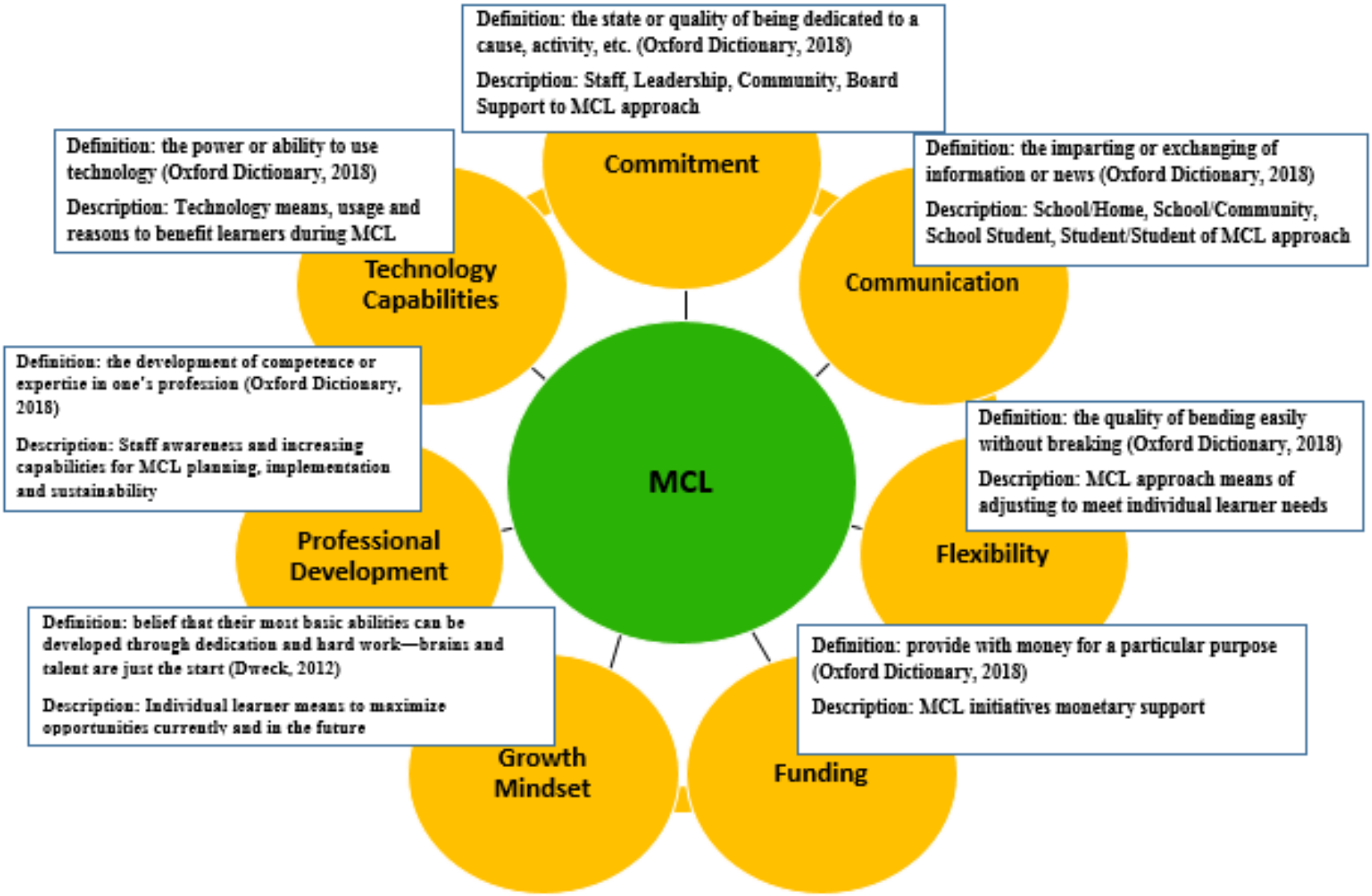

Figure 22. School District Participants Theme Chart

6.2.1 Commitment

The Oxford Dictionary (2018) defines commitment as the state or quality of being dedicated to a cause, activity, etc. Commitment to MCL began with the superintendent and at the leadership team level (Schwahn & McGarvey, 2012; Schwahn & McGarvey, 2014). However, both schools had multiple staff members support MCL. Leadership and facilitators remained committed to overcoming challenges, expanding MCL and exploring next steps. The increased active student engagement, lower discipline referrals and decreased attendance concerns confirmed learners' commitment at both schools. Each community supported MCL initiatives through their respective local organizations and parent support groups. Community and School Board showed commitment, though this was an ongoing challenge at times for both districts. Polk Area School District had greater unification than that of Washington Area School District.

6.2.2 Communication

Communication is the imparting or exchanging of information or news (Oxford Dictionary, 2018). Both districts and MCL schools remained committed to maintaining open lines of communication. Communication included face-to-face meetings, phone calls, MCL handouts, emails, social media online videos and information built and sustained school-to-home/community partnerships. Communication among learners during the school day and through scheduling options helped sustain and grow MCL initiatives such as the Apollo Program or project based learning at Lincoln Elementary School. Additionally, maintaining open lines of

communication between facilitators and learners helped maximize learning opportunities and independent learning potential.

6.2.3 Flexibility

The Oxford Dictionary (2018) defines flexibility as the quality of bending easily without breaking. Both schools substantially accommodated and kept the learner at the center of the learning process (Schwahn & McGarvey, 2012; Schwahn & McGarvey, 2014). Flexibility began with reinventing each school's usable space. At Lincoln Elementary School (LES), teacher classrooms became learner rooms and common planning areas. At Jefferson High School (JHS), the traditional library became the library and learning HUB while the art wing became the Apollo Program wing. Twelve-day learning cycles, learners reporting to multiple instructional locations for lessons throughout each cycle, self-selection of learning options, Flex Block time within a block schedule and 1:1 computing access were examples of process flexibility that benefitted learners' personalized needs.

6.2.4 Funding

Funding is providing with money for a particular purpose (Oxford Dictionary, 2018). Both schools actively sought funding opportunities at the local, state and national levels to provide learners with opportunities. WASD received local and national level grant and donation-based funding through local organizations through a partnership with the Gates Foundation. PASD's external funding sources were at the local and state levels via support from local organizations

and “seed money” from the Pennsylvania Department of Education for the implementation of Watson software. Reallocation of district funding for both schools contributed to sustainability.

6.2.5 Growth Mindset

Dweck’s (2006) concept that the most basic of abilities begin with brains and talent but develop through dedication and hard work aligned with both district’s MCL approach. Book study professional development including district leaders, facilitators and, at PASD, the community members, helped to develop the MCL mindset. In addition, promoting a growth mindset in actions during the school day established this expectation into the learning culture. Lastly, acknowledgement by leadership and facilitators for both schools that MCL needed to continue to grow indicated that there was a clear mindset for maintaining a learner-centered educational process at each school district.

6.2.6 Professional Development

The Oxford Dictionary (2018) defines professional development as the development of competence or expertise in one’s profession. Facilitators and administrators emphasized the need for more professional development opportunities to continue planning, implementing and sustaining MCL. Both districts’ staff attended and presented at multiple MCL conventions at the state and national levels. They were a part of the MCL National Alliance (Mass Customized Learning National Consortium, 2017). Now, multiple years into implementation at each school, however, the professional development approach has shifted to internal growth more than

external. Both schools increasingly provided collaboration opportunities during professional development days in addition to approval for MCL conferences.

6.2.7 Technology Capabilities

Technology capabilities are the power or ability to use technology (Oxford Dictionary, 2018). Each learner had access to a computer at Lincoln Elementary School (LES) and Jefferson High School (JHS). One-to-one computing access, or as Polk Area School District (PASD)/JHS called it,1: World, helped both schools implement MCL. The selected student information systems software, the learner management systems software and the data analysis systems software identified a clear plan for technology usage to maximize learner growth and achievement. Intentions for continued professional development on software systems should benefit facilitators and learners.

6.3 ALIGNMENT OF FINDINGS

Similar to the Focused Concepts developing from the critical steps necessary prior to MCL implementation (Schwahn & McGarvey, 2012), the emerging themes developed from the Focused Concepts. Each emerging theme associated with multiple Focused Concepts.

6.3.1 Commitment

Commitment aligned with all Focused Concepts. Each district was in the process of or created a MCL-based Strategic Design. Each took the necessary steps to transition from a traditional school setting to that of MCL through dedication to eliminate the "Weight Bearing Walls" (WBWs) that encompassed their school prior to MCL. Lincoln Elementary School (LES) addressed eight WBWs while Jefferson High School (JHS) addressed all ten. Both districts made commitments to implementing then expanding on their student information systems, learner management systems and student data systems. Leadership commitments at the administration and staff levels provided guidance for learners and community members to learn more about and buy into MCL. Despite challenges at the School Board and community levels for both districts, neither school's personnel has wavered from continuing to implement MCL. Instead, they remained committed to expanding and polishing their initiatives in the short and long terms.

6.3.2 Communication

Communication was a common theme related to all Focused Concepts also. Each district's developing or established Strategic Design provided the written communication necessary to promote, implement and help sustain MCL. While transitioning from a traditional setting to MCL, the multiple means of communication allowed planning to develop into implementation. Communication was again necessary with transformational technologies because staff and administration first had to discuss what software and hardware would work best for their learners but then had to learn from experts and each other how to implement the technology. The

communication from everyone involved allowed the MCL planning phases to transition into implementation. When there were encountered challenges, the staff and leadership teams continuously remained available for discussions with School Board and community members. They remain in active communication with all parties regarding sustainability.

6.3.3 Flexibility

Flexibility related with all Focused Concepts. Each district maintained flexibility in their planning phases as they pioneered many different educational approaches within their school system. Breaking down WBWs also required adjusted schedules during the workday and required spending extra time planning beyond that of a traditional lesson plan. Transformational Technology implementation required accommodations among facilitators and among learners because each had to rely on the other for operating and maintaining learning through new software and hardware. This required active accommodations by leaders to new opportunities and approaches for learning. Staff and leadership teams met Encountered Challenges with accommodations instead of resistance. Continued flexibility remains paramount in helping expand and solidify MCL at both districts.

6.3.4 Funding

Funding emerged as an issue in Transformational Technologies. It is important to encountered challenges and next steps. Both schools reallocated funding and actively sought means for grant opportunities. Funding accommodations in Transformational Technologies provided opportunities to purchase and implement software and hardware. It helped sustain MCL

opportunities when each school had to become creative with making financial decisions, regardless of the encountered challenges. Equally, funding reallocations and potential grant opportunities continue to help sustain MCL.

6.3.5 Growth Mindset

Growth mindset associated with the Focused Concepts of transitional factors and Leadership, as well as being important to Encountered Challenges and Next Steps. The analysis of data found that breaking down WBWs required a change of direction in the staff thinking. Instead of teaching for grading purposes, they had to learn, and be willing to continue learning how to, instead, facilitate for mastery. This required leadership from all stakeholders to work in unison and promote a growth mindset to the learners. Promotion of a growth mindset became a focal point at Lincoln Elementary School (LES) building wide and at Jefferson High School (JHS) within their Apollo Program, helping to develop active engagement and thus decreased discipline referrals because learners wanted to improve, as did the facilitators.

6.3.6 Professional Development

Professional development connected with all Focused Concepts. At both districts, comprehensive planning committees needed to learn and grow beyond what they traditionally knew about school. They read *Inevitable…* by Schwahn and McGarvey (2012) and conducted other book studies on *Mindset* by Dweck (2012) or *Why School?* by Richardson (2012) to gain a better perspective of other options on current or futuristic school trends.

Each staff needed to learn more about MCL Weight Bearing Walls during planning and into implementation stages. The staff at both districts admitted to needing professional development on implementation of software and hardware. The leadership teams needed to first learn about MCL then provide opportunities such as attending MCL conventions for their staffs. The staffs voluntarily attended the professional development opportunities. However, availability of MCL professional development remained a concern. Each individual displayed leadership by attending as many learning events as possible. Each staff realizes, too, that they will sustain MCL implementation if they continue to learn more about it and continue to grow together.

6.3.7 Technological Capabilities

Lastly, technological capabilities linked with the Focused Concepts of Transitional Factors, Transformational Technologies and Leadership. The associated Focused Concepts helped offset Encountered Challenges while planning for Next Steps associated with this theme. When each school considered transitioning to MCL, both planned and received foundational needs through human resources and those that were computer-based. Each school improved its wireless capabilities. Technology personnel increased at both districts as did the number of computers accessible to learners. Transformational Technologies benefitted parents/guardians through their student information software. It benefitted facilitators and learners through access to a learner management system along with student data systems.

Planning for using technological capabilities required extensive amounts of leadership from multiple types of leaders. For example, the staff at Lincoln Elementary School sat in on various software tutorials because they knew what would be best for their learners. Similar to

the other themes, each district personnel offset potential challenges while planning for next steps regarding technological capabilities by creatively reallocating funding.

6.4 CONCLUSION

These themes, similar to the six Focused Concepts and as Figure 22 identifies, promoted a complete team approach to doing what is best for students/learners. Commitment, communication, flexibility, funding, growth mindset, professional development and technological capabilities played an important role during implementation at LES and JHS. Each helped accentuate the overarching purpose of Mass Customized Learning that is basing every decision on the best interests of each learner in a learner-centered environment. Similar to the seven-step process that Schwahn and McGarvey (2012) identified as critical for MCL implementation, the Focused Concepts identified emerging theme that served as an essential role toward MCL sustainability.

7.0 QUALITATIVE STUDY CONCLUSIONS, IMPLICATIONS AND NEXT STEPS

As society becomes more dependent on the conveniences and personalization associated with technology and flexible schedules, education in the United States continues to transition. Beyond differentiated instruction, individualization and personalization components that benefit students (McClaskey & Bray, 2016), the co-authors of Mass Customized Learning (MCL) maintain that this process provides a complete personalized process. The student, or learner, is at the center of every decision. The thoughts of Schwahn and McGarvey (2012) associate with those of Washington Area School District's (WASD) Ms. Hope and Ms. Faith along with those of Mr. Kennedy and Mr. Roosevelt from Polk Area School District (PASD). Collectively and individually, they believe that the once a school is doing what is best for every learner then it will be implementing a true MCL model.

Triangulation of data findings within the six Focused Concepts (Strategic Design, Transitional Factors, Transformational Technologies, Leadership, Encountered Challenges and Next Steps) built upon the seven-step process that highlighted characteristics for making learner-centered learning the constant and time the variable (Schwahn & McGarvey, 2012). The six Focused Concepts at Lincoln Elementary School (LES) within the WASD and Jefferson High School (JHS) within the PASD uncovered and aligned with seven emergent themes (Commitment, Communication, Flexibility, Funding, Growth Mindset, Professional Development and Technological Capabilities).

These findings may help to solidify implications for future research, for professional growth and for next steps to consider for MCL implementation at other schools, including my own. In addition, the findings may help educational leaders at other schools determine if MCL is a sustainable option in the long term.

7.1 IMPLICATIONS FOR FUTURE RESEARCH

When researching Mass Customized Learning (MCL) planning and/or implementation, four initial considerations assisted me. First, I built my MCL knowledge prior to considering further research. "Inevitable…" by Schwahn & McGarvey (2012) was a great starting point. However, the "From Our Library" or glossary section of this book provided many other education and business-based resources associated with MCL including those referenced by each school's interviewees.

Next, I further considered contributing components that led to MCL such as personalized learning. The foundational resources referenced in this dissertation helped. I also read articles and books that countered MCL benefits and sustainability. As MCL becomes more widespread, more references in favor of and in opposition of this initiative may become available. For example, a recently published article that identified students' interests in changing exceeded a school's ability to continuously be the change agent for a variety of reasons, customization among them (Felix, 2017).

Third, researching Lindsay Unified School District in California provided a solid reference school for MCL planning and implementation. Lindsay Unified was among the longest tenured and most established Grades K-12, MCL-based districts in the United States.

Others may develop. However, this California school was, at the time, at the forefront of the MCL movement.

Finally, following the advice of my Dissertation committee, conducting the one onsite visit greatly helped my cause for identifying implementation while formulating thoughts following documentation analysis and preluding interviews.

7.2 FURTHER STUDY

With answers to questions from this qualitative study, other questions develop for research purposes. For example, would placing a more concentrated focus on developing an understanding of how a district or school planned for MCL instead of simultaneously with implementation uncover new findings? In addition, would planning for multiple onsite visits provide a deeper understanding of how progressive the facilitators are with personalized learning? I found great value in conducting an onsite visit at each school. It helped triangulate my data. It also provided a first-hand account that each school walked their talk. However, a second and possible third day to observe lessons in classrooms may have better uncovered how each school implemented their flexible scheduling and Transformational Technologies, what Schwahn and McGarvey (2012) refer to as the tipping points between personalized learning and MCL.

Further questions regarding sustainability develop too. Are there critical similarities between schools beyond what the six Focused Concepts revealed and emerging themes revealed? Would this process look different at a middle school level? If so, how and why? Each question from this qualitative study served a purpose for deepening my knowledge of MCL prior to

considering promoting implementation at my district of employment. Equally, each question posed in this section could help another researcher begin his or her quest for helping others learn more about MCL beyond my findings.

7.3 PROFESSIONAL GROWTH

This qualitative study developed my knowledge of different degrees of learning and learning processes. I realized that there is still a lot to explore and learn regarding the pros and cons of MCL planning, implementation and sustainability. However, my knowledge of the research, concepts, themes, ideals and approaches related to MCL increased through this study. I am better equipped to avoid pitfalls and follow the guidance learned from Washington Area and Polk Area School Districts.

More importantly, this dissertation journey taught me how to think more analytically about a topic. The MCL authors promote form following function. Similarly, my viewpoint is now to look at the processes' purpose first instead of just starting with how a process could lead to a product. I look at the point and counterpoint to a process more now than I would have in the past. This was an unintended result of my learning but one of great importance moving forward.

7.4 CONSIDERATIONS FOR MY OWN SCHOOL AND DISTRICT

Review and analysis of Mass Customized Learning at Washington Area School District's Lincoln Elementary School and Polk Area School District's Jefferson High School identified the

tools, structures, means and opportunities for empowering students/learners. Each school focus incorporated flexible scheduling and Transformational Technologies (Schwahn & McGarvey, 2012; Schwahn & McGarvey, 2014) to do what is best for their learners within MCL.

My own school and district are not currently weighing options for MCL. However, there are foundational steps necessary within each of the six Focused Concept areas should it so choose to explore MCL in the future. The immediate next step is to share the findings of the case studies from each of the schools with building level and district level leadership. The foundational knowledge received through exploration of MCL thus far prompts me to promote consideration for this learning opportunity. Further exploration of the benefits and challenges of this approach, through collaboration with the leadership team, would be the immediate next step.

However, based on the review of literature and these qualitative study findings, I would recommend MCL at my school and district. Three reasons for recommendation. First, my district and school of employment is progressive in their thinking of doing what is best for students. Second, I hear the same concerns from staff regarding wanting to help their students more than they currently do in a traditional setup. Finally, our district placed a heavy emphasis on creating options for our high school students and providing both teachers and students with the technological means for success with current educational trends. Similar to Washington Area and Polk Area, planning and implementation of MCL would take time, the reward would be worth the effort if it meant a better learning opportunity for students.

7.7 SUMMARY AND NEXT STEPS

There remains limited examples of how MCL looks in implementation and even less about the long-term sustainability of this process. However, the review of literature and this qualitative study provided insight into the foundational stages that build toward MCL-based personalized learning. Whether MCL implementation should occur at my own district is worth consideration. Whether it would be sustainable at other schools is to-be-determined. Regardless, the intended results of this journey, intended or unintended, will remain at the forefront of my own personalized learning process.

APPENDIX A

DISTRICT PARTICIPANT CONSENT COVER LETTER

Dear Superintendent _____,

My name is Ted Benning and I am a doctoral candidate at the University of Pittsburgh. I am also a high school assistant principal at ******* ******* School District. I am working on a dissertation research case study that examines the implementation and sustainability with fidelity of a Mass Customized Learning approach in school districts.

I respectfully request permission to have the _____ School District be among the participating districts in this case study. The _____ School District was selected because of its current implementation of a Mass Customized Learning (MCL) process at the ____ level. The case study has three specific means for collecting data associated with the district. The first means is an artifact collection of district-related MCL written information. The second means involves interviews with agreed upon members of the district staff who are actively involved in the MCL process at the school. The final means involves an onsite visit at an agreed upon date and time when I can tour the school's implementation of MCL. If you consent for the _____ School District to be among those who voluntarily participate in this case study then please see the second page of this letter regarding the district participant information. Additionally, if you would like to acquire additional information prior to determining participation, please contact me via the enclosed business card or via phone at ***-***-****. I appreciate your feedback and I look forward to the prospective of working with you to further research on MCL sustainability.

Sincerely,

Edward W. (Ted) Benning

APPENDIX B

DISTRICT AND INDIVIDUAL PARTICIPANTS CONSENT FORM

Dear Superintendent _____,

Thank you to the _____ School District and to you for your collective permission to participate in a dissertation research case study that explores the implementation and sustainability of a Mass Customized Learning approach in school districts.

With your signed approval below, I will plan to begin the process for collecting data from the _____ School District in association with the Mass Customized Learning process. Please anticipate a follow up letter inquiring about MCL-based, school district written and public-related documentation. Equally, please list any individual or individuals who you consider as active leaders of the MCL process and could serve as points-of-contact within your district for interviews.

If you would like to acquire additional information prior to determining participation, please contact me via the enclosed business card contents or via phone at ***-***-****. Thank you again and I look forward to working with you to further research on MCL sustainability.

☐ I hereby consent to the _____ School District's participation in the case study on Mass Customized Learning implementation and sustainability.

Signature: _____ Date: _____

☐ I hereby grant permission for the following individuals to serve as initial points-of-contact for the interview portion of the data collection process. Please list the name of the individual(s) and his/her/their position and contact information:

_____

_____

_____

APPENDIX C

DISTRICT MCL ARTIFACTS REQUEST FORM

Dear Superintendent _____,

Thank you to the _____ School District and to you for your collective permission to participate in a dissertation research case study that explores the implementation and sustainability of a Mass Customized Learning approach in school districts.

This case study has three specific means for collecting data, including documentation of district-related MCL information. The MCL-based documentation could include, but are not limited to, the items listed below. Please share updates on the items that would be available for review. Identify the items by checking the box beside the item along with circling the option of each item's location. If necessary, please also provide any pertinent notes in the line to the right of the item requested.

- ☐ District Comprehensive Plan/Strategic Design: (Electronic Attachment, Online, Paper):
- ☐ School Board Policies: (Electronic Attachment, Online, Paper):
- ☐ School Board Minutes: (Electronic Attachment, Online, Paper):
- ☐ Professional Development Agendas or Plans: (Electronic Attachment Online, Paper):
- ☐ Memos to Staff: (Electronic Attachment Online, Paper):
- ☐ Other MCL-Based Information: (Electronic Attachment Online, Paper):
- ☐ Other MCL-Based Information: (Electronic Attachment Online, Paper):

If you would like additional information regarding pertinent information and/or the reasoning for collecting MCL-related artifacts, please contact me via the enclosed business card or via phone at ***-***-****. I appreciate your feedback and I look forward to working with you in the time ahead.

Sincerely,

Edward W. (Ted) Benning

APPENDIX D

DISTRICT MCL SIX FOCUSED CONCEPTS SUMMARY

Dear Superintendent _____,

This case study has three specific means for collecting data associated with the district that, along with the artifact collection of district-related Mass Customized Learning (MCL) written information and an onsite visit, includes interviewing individuals actively engaged in the MCL initiatives at the building and/or district level. The focus concepts, summarized below and on the successive pages, include school district vision, school transitional factors, technology influences and considerations, leadership influences, encountered challenges, and next steps toward sustainability and growth. Each focus concept is instrumental in helping the researcher acquire the necessary data and knowledge about each participating district.

1. The School's Vision or "Strategic Design:"

- Specific written components that identify who, what, where, why and how the school puts the leaners, or students, at the focal point of the school system. This could include your core values, the "strategic alignment," or your associated policies, processes and organizational structure, the written "Learning Outcomes," or the written curriculum that demonstrates learning in association with the Pennsylvania Core Standards.
- Written specific leadership domains, along with the current and future professional development strategies and approaches that could include partnerships with external individuals or organizations

- The transformational technologies that, in writing, your district uses currently along with planned.

- Written information about how your system plans to offset the "Weight Bearing Walls" to meet the individual learner's needs.
- How your district maintains an in-depth analysis of future trends for post-graduate students followed by a continued focus on what is best for each learner in a future-focused, systematic and logical way.

2. Transitional Factors:

- How your district addresses the "Weight Bearing Walls" that include a nine-month school calendar, grade levels, students assigned to classrooms, class periods with specific timeframes for learning opportunities, courses associated with a set curriculum, textbooks, report cards that identify an A-F grading system and a designated learning opportunity in school alone during implementation.
- The background to why the district transitioned to a MCL-based approach. Were there behavioral concerns, academic concerns, or possibly both? Did demographics contribute to the educational shift?
- Professional development measures, including methods for intrinsically motivating students, which the school considered then conducted during the MCL planning and/or implementation phases.
- Funding availability amid the transition to MCL.
- Other factors associated with planning, implementation and sustainability potential.

3. **Technology Influences and Considerations**:

- Who has technology access and how does the school use it? This could include how each participant creates flexibility for each individual learner to allow learners to master a concept either within the school building, the school day or beyond.
- Cost considerations, cost allocations and cost resources along with the district's approach to its curriculum under a MCL process.
- Professional development components of implementation and sustainability.

4. **Leadership Influences:**

- In addition to the superintendent, which other individuals who serve as leaders and point-of-contacts regarding the implementation and sustainability of the MCL process?
- Who identifies as the "authentic leaders," or those who create the reason for the change?
- Who serves as the "visionary leaders," or those who identify a concrete picture for change?
- Who is or are the "relational leaders," or those who gain commitment for the change?
- Who are the "quality leader(s)," or those who create the capacity to change?
- Who are the "service leaders," or those who provide support for the change?

5. Encountered Challenges:

- What were and/or are the concerns and growing pains, anticipated and unanticipated, amid the MCL's planning then implementation process?
- What was the district's approach to these challenges and growing pains?

6. **Next Steps toward Sustainability and Growth:**

- How your district plans to maintain and build upon the MCL initiatives currently implemented in the short and long term.
- How the district clearly identifies your next steps toward both sustainability and growth to your staff, students, parents and community
- How the district evaluates the MCL process that contributes to sustainability and growth.

APPENDIX E

SEMI-STRUCTURED INTERVIEW INDIVIDUAL CONSENT FORM

Dear _____,

You have been identified as someone in the _____ district who is a valuable reference for whom I should interview regarding this case study on Mass Customized Learning implementation and sustainability. Please provide your preferred response to the below inquiries. Your signature below acknowledges your formal interest and, if applicable, the guidelines for participating in an interview.

( ) I give my consent to participate and will complete the Memorandum of Understanding below.

( ) I do not give consent to participate in the study.

Memorandum of Understanding

I (print your name) _____, do hereby consent to participate in the qualitative case study on Mass Customized Learning implementation and sustainability at _____ School District. I acknowledge that the attached copy of the semi-structured interview questions serve as a guide for discussion during the agreed upon interview date and time. I acknowledge that my name will be changed in the study to allow for responses that are more candid. In addition, I agree to the following conditions for the interview:

☐ I consent to have the interview audio recorded for information accuracy purposes

☐ I consent to provide additional thoughts following the interview, if necessary

This memorandum of understanding is effective from the date that I sign this form through the conclusion of all data collection from the school.

Signature of Interviewee Candidate: _____ Date: _____

For further clarification regarding the above information or attached interview question template prior to signing, please contact me via the enclosed business card or via phone at 814-248-1937. Thank you.

Sincerely,

Edward W. (Ted) Benning

APPENDIX F

STAFF SEMI-STRUCTURED INTERVIEW QUESTIONS

Dear _____:

Thank you for taking time to discuss the Mass Customized Learning (MCL) process at your school. Your contributions will greatly help others better understand your district's approach to implementing, sustaining and growing MCL. Prior to our formal interview, please review the below guiding questions which will serve as starting points into helping me better understand your MCL experiences at (enter district's name here). To help ensure that I accurately and completely interpret our interview, I will plan to record our discussion. You will have the chance to provide additional information after the interview if you prefer. Thank you again and in advance for your time and help.

1. Why did your school district implement elements of MCL? What considerations led to the adoption of Mass Customized Learning? What had traditionally been your approach? How have the learners reacted? How have the parents and the community reacted?

2. What has been your involvement with the process?

3. How has your school's MCL initiative affected your practice? For example, as a teacher, what was your classroom's typical day like prior to MCL and/or has it changed since?
   a) Is there a different approach to the grading process, curricular approach or otherwise?
   b) Is there any difference with how students go through their day? What positives have emerged? What challenges have emerged?

4. How has technology contributed to the process? Have there been benefits or losses associated with technology?

5. How have you and your colleagues adjusted to MCL? How have they helped your cause for MCL implementation? Did you feel prepared to engage professionally with MCL? Did you have professional development needs? If so, what were they? How has the school met them? Are there remaining challenges still needing addressed that you feel

are important for next steps? What professional development measures were in place that benefitted you the most? Do you know of any upcoming opportunities?

6. Have you noticed any differences in students since implementing MCL? For example - attendance, engagement in class, motivation, task completion, parent engagement, efficiency to mastery, student behavior, etc.

7. Have there been any concerns and/or growing pains since MCL implementation at this school/district? What was the district's response if there were conflicts? How have you and your colleagues responded?

8. What are the next steps with your MCL process in the short and long terms? How do you see yourself contributing to this effort? What do you believe needs to continue to ensure sustainability in the years ahead?

9. Whom else do you think I should speak to understand best how MCL is developing in this school?

APPENDIX G

ADMINISTRATION SEMI-STRUCTURED INTERVIEW QUESTIONS

Dear _____:

Thank you for taking time to discuss the Mass Customized Learning (MCL) process at your school. Your contributions will greatly help others better understand your district's approach to implementing, sustaining and growing MCL. Prior to our formal interview, please review the below guiding questions which will serve as starting points into helping me better understand your MCL experiences at (enter district's name here). To help ensure that I accurately and completely interpret our interview, I will plan to record our discussion. You will have the chance to provide additional information after the interview if you prefer. Thank you again and in advance for your time and help.

1. Why did your school district implement elements of MCL? What considerations led to the adoption of Mass Customized Learning? What had traditionally been your approach? How have the learners reacted? How have the parents and the community reacted?

2. How long did you plan prior to implementing MCL in your school district? What did the planning process look like? Did your School Board need to change any Board policies? What was the most memorable part of the transition, for better and/or worse?

3. How has implementation affected the leadership expectations for you or others? Did the leadership expectations within the classroom, office and/or community change upon implementation?

4. Describe a typical day at your school prior to MCL. How has it changed since MCL implementation?
   a) Is there a different approach to the grading process, curricular approach or otherwise?
   b) Is there any difference with how students go through their day? How has MCL had a positive impact on your school? What challenges have emerged?

5. How has technology contributed to the process? Have there been benefits or losses associated with technology?

6. How have the staff and your colleagues adjusted to MCL? How have they helped your cause for MCL implementation? Did you feel prepared to engage professionally with MCL? Did you have professional development needs? If so, what were they? How has the school met them? Are there remaining challenges still needing addressed that you feel are important for next steps? What professional development strategies had the most impact? Do you know of any upcoming opportunities?

7. To your knowledge, how has the district helped fund the MCL-based initiatives? Have there been leadership changes within the classroom, office and/or community change as a result?

8. Have there been any concerns and/or growing pains since MCL implementation at this school/district? What was the district's approach? What has been your colleagues' response?

9. What are the next steps with your MCL process in the short and long terms? How do you see yourself contributing to this effort? What do you believe needs to continue to ensure sustainability in the years ahead?

10. Were there any plans in place for monitoring students following graduation? Since MCL implementation, is there now? What are the data showing if so?

11. Would you be interested in discussing and/or know of another individual who could discuss MCL at a future time?

APPENDIX H

THE FOLLOW-UP INTERVIEW QUESTIONS TEMPLATE

Mr. Roosevelt:

Thank you for agreeing to an interview recently regarding the Mass Customized Learning (MCL) process at Polk Area School District/Jefferson High School. As with the first interview, and to help ensure accurate interpretation of our second interview, With your permission, I plan to again record our discussion. You will have the chance to provide additional information after the interview if you prefer. Thank you again for your time and help.

1. You mentioned the five paths for which a student could take during high school. Could you walk through a student's schedule for each one and share how mass customized learning influences some if not all paths?

2. What led you to the decisions of using the current technology software or MCL? Where there other software components at the IMS, LMS, or GPS levels prior to picking what you have?

3. How have you had to realign your leadership at the central office, building level, and classroom levels since Mass Customized Learning implementation? What would you consider the biggest challenges and or roadblocks to implementation in the last five years? How has everyone moved forward despite the barriers?

4. How do you plan to keep the momentum going with the Apollo program?

5. When we last spoke, it seemed that you had several next steps for MCL sustainability. Would you be able to elaborate on those beyond our discussion before?

APPENDIX I

DOCUMENTATION, ONSITE VISIT AND INTERVIEWS QUESTIONS #1 AND #2

OUTLINE

Washington Area/Lincoln Elementary School and Polk Area School District/Jefferson High

School Documentation, Onsite Visit and Interviews Questions #1 and #2 Outline:

1. **What considerations led to the adoption of Mass Customized Learning in the two schools?**

Strategic Design

Pattern Names and Why to the question from Figure #2, "How does the district incorporate MCL in strategic planning:"

-

-DOCUMENTATION-

-

-ONSITE VISIT-

Pattern Names and Why:

-

-INTERVIEWS-

Comparisons of similarities/differences themes between the staff with those of the admin themes and Why:

-

Conceptual Coherence triangulation of three data sources (documentation, onsite visits and interviews)

-

Transitional Factors

Pattern Names and Why to the question from Figure #2, "What are the planned and actual steps of implementation used by the district to move to MCL:"

-DOCUMENTATION-

-

-ONSITE VISIT-
Pattern Names and Why:

-

-INTERVIEWS-

Comparisons of similarities/differences themes between the staff with those of the admin themes and Why:

-

Conceptual Coherence triangulation of three data sources (documentation, onsite visits and interviews)

-

Transformational Technologies

Pattern Names and Why to the question from Figure #2, "What have been the technological tools incorporated to maximize MCL in the district:"

-DOCUMENTATION-

-

-ONSITE VISIT-
Pattern Names and Why:

-

-INTERVIEWS-

Comparisons of similarities/differences themes between the staff with those of the admin themes and Why:

-

Conceptual Coherence triangulation of three data sources (documentation, onsite visits and interviews)

-

Leadership

Pattern Names and Why to the question from Figure #2, "How have school and district leaders modified their instructional support to enhance MCL:"

-DOCUMENTATION-

-

-ONSITE VISIT-
Pattern Names and Why:

-

-INTERVIEWS-

Comparisons of similarities/differences themes between the staff with those of the admin themes and Why:

-

Conceptual Coherence triangulation of three data sources (documentation, onsite visits and interviews)

-

Encountered Challenges

Pattern Names and Why to the question from Figure #2, "What have been the anticipated and unanticipated challenges encountered? How has the school mediated these?:"

-DOCUMENTATION-

-

-ONSITE VISIT-
Pattern Names and Why:

-

-INTERVIEWS-

Comparisons of similarities/differences themes between the staff with those of the admin themes and Why:

-

Conceptual Coherence triangulation of three data sources (documentation, onsite visits and interviews)

-

Next Steps

Pattern Names and Why to the question from Figure #2, "What strategies are in place to sustain MCL in the district:"

-DOCUMENTATION-

-

-ONSITE VISIT-
Pattern Names and Why:

-

-INTERVIEWS-

Comparisons of similarities/differences themes between the staff with those of the admin themes and Why:

-

Conceptual Coherence triangulation of three data sources (documentation, onsite visits and interviews)

-

2. How is Mass Customized Learning being implemented and evaluated in the two schools?

Strategic Design

Pattern Names and Why to the question from Figure #2, "How does the district incorporate MCL in strategic planning:"

-DOCUMENTATION-

-

-ONSITE VISIT-
Pattern Names and Why:

-

-INTERVIEWS-

Comparisons of similarities/differences themes between the staff with those of the admin themes and Why:

-

Conceptual Coherence triangulation of three data sources (documentation, onsite visits and interviews)

-

Transitional Factors

Pattern Names and Why to the question from Figure #2, "What are the planned and actual steps of implementation used by the district to move to MCL:"

-DOCUMENTATION-

-

-ONSITE VISIT-
Pattern Names and Why:

-

-INTERVIEWS-

Comparisons of similarities/differences themes between the staff with those of the admin themes and Why:

-

Conceptual Coherence triangulation of three data sources (documentation, onsite visits and interviews)

-

Transformational Technologies

Pattern Names and Why to the question from Figure #2, "What have been the technological tools incorporated to maximize MCL in the district:"

-DOCUMENTATION-

-

-ONSITE VISIT-
Pattern Names and Why:

-

-INTERVIEWS-

Comparisons of similarities/differences themes between the staff with those of the admin themes and Why:

-

Conceptual Coherence triangulation of three data sources (documentation, onsite visits and interviews)

-

Leadership

Pattern Names and Why to the question from Figure #2, "How have school and district leaders modified their instructional support to enhance MCL:"

-DOCUMENTATION-

-

-ONSITE VISIT-
Pattern Names and Why:

-

-INTERVIEWS-

Comparisons of similarities/differences themes between the staff with those of the admin themes and Why:

-

Conceptual Coherence triangulation of three data sources (documentation, onsite visits and interviews)

-

Encountered Challenges

Pattern Names and Why to the question from Figure #2, "What have been the anticipated and unanticipated challenges encountered? How has the school mediated these?:"

-DOCUMENTATION-

-

-ONSITE VISIT-
Pattern Names and Why:

-

-INTERVIEWS-
Comparisons of similarities/differences themes between the staff with those of the admin themes and Why:

-

Conceptual Coherence triangulation of three data sources (documentation, onsite visits and interviews)

-

Next Steps

Pattern Names and Why to the question from Figure #2, "What strategies are in place to sustain MCL in the district:"

-

-DOCUMENTATION-

-

-ONSITE VISIT-
Pattern Names and Why:

-

-INTERVIEWS-
Comparisons of similarities/differences themes between the staff with those of the admin themes and Why:

-

Conceptual Coherence triangulation of three data sources (documentation, onsite visits and interviews)

-

APPENDIX J

DISTRICTS DOCUMENTATION ANALYSIS OUTLINE

Washington Area/Lincoln Elementary and Polk Area/Jefferson High School Documentation Analysis Outline Template:

1. **What considerations led to the adoption of Mass Customized Learning in the two schools?**

Strategic Design

Transitional Factors

Transformational Technologies

Leadership

Encountered Challenges

Next Steps

2. **How is Mass Customized Learning being implemented and evaluated in the two schools?**

Strategic Design

Transitional Factors

Transformational Technologies

Leadership

Encountered Challenges

Next Steps

APPENDIX K

ONSITE VISIT ANALYSIS OUTLINE FOR QUESTION #1 AND QUESTION #2

Lincoln Elementary School/Jefferson High School Onsite Visit Outline:

1. **What considerations led to the adoption of Mass Customized Learning in the two schools?**

Strategic Design

Sources of Information and Onsite Visit Artifacts:

-

-Introduction and Tour-

-

-English Language Arts and Mathematics Classrooms/Apollo Program-

-

Conclusion of Rating on Continuum and Why:

-

Transitional Factors

Sources of Information and Onsite Visit Artifacts:

-

-Introduction and Tour-

-

-English Language Arts and Mathematics Classrooms/Apollo Program-

-

Conclusion of Rating on Continuum and Why:

-

Transformational Technologies

Sources of Information and Onsite Visit Artifacts:

-

-Introduction and Tour-

-

-English Language Arts and Mathematics Classrooms/Apollo Program-

-

Conclusion of Rating on Continuum and Why:

-

Leadership

Sources of Information and Onsite Visit Artifacts:

-

-Introduction and Tour-

-

-English Language Arts and Mathematics Classrooms/Apollo Program-

-

Conclusion of Rating on Continuum and Why:

-

Encountered Challenges

Sources of Information and Onsite Visit Artifacts:

-

-Introduction and Tour-

-

-English Language Arts and Mathematics Classrooms/Apollo Program-

-

Conclusion of Rating on Continuum and Why:

-

Next Steps

Sources of Information and Onsite Visit Artifacts:

-

-Introduction and Tour-

-

-English Language Arts and Mathematics Classrooms/Apollo Program-

-

Conclusion of Rating on Continuum and Why:

-

2. <u>How is Mass Customized Learning being implemented and evaluated in the two schools?</u>

<u>Strategic Design</u>

Sources of Information and Onsite Visit Artifacts:

-

-Introduction and Tour-

-

-English Language Arts and Mathematics Classrooms/Apollo Program-

-

Conclusion of Rating on Continuum and Why:

-

<u>Transitional Factors</u>

Sources of Information and Onsite Visit Artifacts:

-

-Introduction and Tour-

-

-English Language Arts and Mathematics Classrooms/Apollo Program-

-

Conclusion of Rating on Continuum and Why:

-

<u>Transformational Technologies</u>

Sources of Information and Onsite Visit Artifacts:

-

-Introduction and Tour-

-

-English Language Arts and Mathematics Classrooms/Apollo Program-

-

Conclusion of Rating on Continuum and Why:

-

Leadership

Sources of Information and Onsite Visit Artifacts:

-

-Introduction and Tour-

-

-English Language Arts and Mathematics Classrooms/Apollo Program-

-

Conclusion of Rating on Continuum and Why:

-

Encountered Challenges

Sources of Information and Onsite Visit Artifacts:

-

-Introduction and Tour-

-

-English Language Arts and Mathematics Classrooms/Apollo Program-

-

Conclusion of Rating on Continuum and Why:

-

Next Steps

Sources of Information and Onsite Visit Artifacts:

-

-Introduction and Tour-

-

-English Language Arts and Mathematics Classrooms/Apollo Program-

-

Conclusion of Rating on Continuum and Why:

-

APPENDIX L

INTERVIEW CODING TEMPLATE

Thoughts and Theories:	Question:	Paraphrased Evidence:

Figure 23. Interview Coding Template

APPENDIX M

TABLE #1: ADMINISTRATOR CODING TEMPLATE

Table 1. Administrator Coding Template

Interview Question (overarching Q1, Q2):	Administrator #1:	Administrator #2:	Combined Interview Takeaway Points, Focus Areas (S.D., TF, TT, L, EC, NS) Alignment
1.	•	•	•
2.	•	•	•
3.	•	•	•
4.	•	•	•
5.	•	•	•
6.	•	•	•
7.	•	•	•
8.	•	•	•
9.	•	•	•
10.	•	•	•
11.	•	•	•

APPENDIX N

TABLE #2: STAFF CODING TEMPLATE

Table 2. Staff Coding Template

Interview Question (overarching Q1, Q2):	Staff Member #1 (LES and JHS):	Staff Member #2 (LES and JHS):	Staff Member #3 (LES and JHS):	Staff Member #4 (JHS):	Combined Interview Takeaway Points, Focus Areas (S.D., TF, TT, L, EC, NS) Alignment
1.	•	•	•	•	•
2.	•	•	•	•	•
3.	•	•	•	•	•
4.	•	•	•	•	•
5.	•	•	•	•	•
6.	•	•	•	•	•
7.	•	•	•	•	•
8.	•	•	•	•	•
9.	•	•	•	•	•
10.	•	•	•	•	•
	•	•	•	•	•

APPENDIX O

ADMINISTRATOR FOCUS THEMES CHART

Strategic Design: Strategic Design: "How does the district incorporate MCL in strategic planning:"

- **Board Policy Changes:**

Transitional Factors: "What are the planned and actual steps of implementation used by the district to move to MCL:"

Why and Considerations:

- **Traditionally:**
- **Learners Reaction:**
- **Planning Length for MCL:**
- **MCL Planning Process:**
- **Most Memorable Transition Aspects:**
- **How Implementation affected Leadership for Self:**
- **Implementation Classroom Changes:**
- **Implementation Community Changes:**

- **Days Prior to MCL:**
- **Changes since Implementation:**
- **Weight Bearing Wall Changes:**
- **Staff/Colleague MCL Adjustments:**
- **-Transformational Technologies-"What have been the technological tools incorporated to maximize MCL in the district:"**

Technology Contributions:

- **Technology Benefits:**
- **Technology Losses:**
- **-Leadership- "How have school and district leaders modified their instructional support to enhance MCL:"**

Parent and Community Reaction:

- **How Implementation affected Leadership for Self:**
- **How Implementation affected Leadership for Others:**
- **Implementation Classroom Changes:**
- **Implementation Office Changes:**
- **Implementation Community Changes:**
- **Positive Impacts:**
- **District funding for MCL:**

Leadership Changes in the Classroom:

- **Leadership Changes in the Office:**
- **Leadership Changes in the Community:**
- **Emerging Challenges:**
- **Staff Support for MCL Implementation:**
- **MCL Professional Preparedness:**
- **MCL Professional Development Needs:**
- **Has School met MCL Professional Needs?**
- **Professional Development Measures impacting MCL and to What Degree:**
- **District's Approach to Concerns/Growing Pains:**
- **Colleagues' Response to Concerns/Growing Pains:**
-

-Encountered Challenges-"What have been the anticipated and unanticipated challenges encountered? How has the school mediated these?:"

Implementation Office Changes:

- **Remaining Challenges:**
-

Implementation Community Changes:

- **Parent and Community Reaction:**
- **Remaining Challenges:**
-

Concerns/Growing Pains since Implementation:

- **Professional Development Measures impacting MCL and to What Degree:**
- **Colleagues' Response to Concerns/Growing Pains:**
- **-Next Steps- "What strategies are in place to sustain MCL in the district:"**

Upcoming MCL Opportunities:

- **Short Term Next Steps:**
- **Long Term Next Steps:**
- **Self-Contributions toward MCL Sustainability:**
- **Means for Ensuring Sustainability:**
- **Post-Graduation Monitoring Plans before MCL:**
- **Post-Graduate Monitoring Plans since MCL:**
- **Data Results, if Applicable:**

APPENDIX P

STAFF FOCUS THEMES CHART

PHASE #1: Tallied Takeaway Theme Answers (One, Two, Three Staff Response Codes)

Strategic Design: "How does the district incorporate MCL in strategic planning:"

Transitional Factors: "What are the planned and actual steps of implementation used by the district to move to MCL:"

Why and Considerations:

Traditionally:

Learners Reaction:

Parent and Community Reaction:

Days Prior to MCL:

Changes since Implementation:

Staff Interactions/Weight Bearing Walls:

Positive Impacts:

MCL Professional Preparedness:

MCL Professional Development Needs:

Observed examples of differences:

-Transformational Technologies- "What have been the technological tools incorporated to maximize MCL in the district:"

Technology Contributions:

Technology Benefits:

Technology Losses:

-Leadership- "How have school and district leaders modified their instructional support to enhance MCL:"

Staff/Colleague MCL Adjustments:

Staff Support for MCL Implementation:

Has School met MCL Professional Needs?

Professional Development Measures impacting MCL and to What Degree:

-Encountered Challenges- "What have been the anticipated and unanticipated challenges encountered? How has the school mediated these?:"

Emerging Challenges:

Remaining Challenges:

Concerns/Growing Pains since Implementation:

School's Approach to Concerns/Growing Pains:

Colleagues' Response to Concerns/Growing Pains:

-Next Steps- "What strategies are in place to sustain MCL in the district:"

Upcoming MCL Opportunities:

Short Term Next Steps:

Long Term Next Steps:

Self-Contributions toward MCL Sustainability:

Means for Ensuring Sustainability:

PHASE 2: Focused Concept Question and Answer Relation:

Strategic Design: "How does the district incorporate MCL in strategic planning:"

Transitional Factors: "What are the planned and actual steps of implementation used by the district to move to MCL:"

Why and Considerations:

Traditionally:

Learners Reaction:

Parent and Community Reaction:

Days Prior to MCL:

Changes since Implementation:

Staff Interactions/Weight Bearing Walls:

Positive Impacts:

MCL Professional Preparedness:

MCL Professional Development Needs:

Observed examples of differences:

-Transformational Technologies- "What have been the technological tools incorporated to maximize MCL in the district:"

Technology Contributions:

Technology Benefits:

Technology Losses:

-Leadership- "How have school and district leaders modified their instructional support to enhance MCL:"

Staff/Colleague MCL Adjustments:

Staff Support for MCL Implementation:

Has School met MCL Professional Needs?

Professional Development Measures impacting MCL and to What Degree:

-Encountered Challenges- "What have been the anticipated and unanticipated challenges encountered? How has the school mediated these?:"

Emerging Challenges:

Remaining Challenges:

Concerns/Growing Pains since Implementation:

School's Approach to Concerns/Growing Pains:

Colleagues' Response to Concerns/Growing Pains:

-Next Steps- "What strategies are in place to sustain MCL in the district:"

Upcoming MCL Opportunities:

Short Term Next Steps:

Long Term Next Steps:

Self-Contributions toward MCL Sustainability:

Means for Ensuring Sustainability:

PHASE 3: Focused Concept Question and Answer Relation:

Strategic Design: "How does the district incorporate MCL in strategic planning:"

Transitional Factors: "What are the planned and actual steps of implementation used by the district to move to MCL:"

Why and Considerations:

Traditionally:

Learners Reaction:

Parent and Community Reaction:

Days Prior to MCL:

Changes since Implementation:

Staff Interactions/Weight Bearing Walls:

Positive Impacts:

MCL Professional Preparedness:

MCL Professional Development Needs:

Observed examples of differences:

-Transformational Technologies- "What have been the technological tools incorporated to maximize MCL in the district:"

Technology Contributions:

Technology Benefits:

Technology Losses:

-Leadership- "How have school and district leaders modified their instructional support to enhance MCL:"

Staff/Colleague MCL Adjustments:

Staff Support for MCL Implementation:

Has School met MCL Professional Needs?

Professional Development Measures impacting MCL and to What Degree:

-Encountered Challenges- "What have been the anticipated and unanticipated challenges encountered? How has the school mediated these?:"

Emerging Challenges:

Remaining Challenges:

Concerns/Growing Pains since Implementation:

School's Approach to Concerns/Growing Pains:

Colleagues' Response to Concerns/Growing Pains:

-Next Steps- "What strategies are in place to sustain MCL in the district:"

Upcoming MCL Opportunities:

Short Term Next Steps:

Long Term Next Steps:

Self-Contributions toward MCL Sustainability:

Means for Ensuring Sustainability:

APPENDIX Q

STAFF AND ADMINISTRATOR CHART

WASD/LES or PASD/JHS Interviews Questions #1 and #2 Outline:

1. **What considerations led to the adoption of Mass Customized Learning in the two schools? (Q 1 & 2)**

Strategic Design

Administration:

- Ms. Hope/Mr. Kennedy
- Ms. Faith/Mr. Roosevelt

-__ Main Takeaway Themed Responses-

-Specific Evidence-

-

Pattern Names and Why to the question from Figure #2, "How does the district incorporate MCL in strategic planning:"

-

Conclusions based on Patterns of Findings:

-

Staff Participant:

- Ms. Smith/Mr. Will
- Ms. John/Mrs. Claire
- Ms. Doe/Mr. Draw
- N/A – Mr. Page

- __ Main Takeaway Themed Responses-

-Specific Evidence-

Pattern Names and Why to the question from Figure #2, "How does the district incorporate MCL in strategic planning:"

Conclusion of If-Then Pattern:

-

Comparisons of similarities/differences themes between the staff with those of the admin themes and Why:

-

<u>Transitional Factors</u>

Administration:

- Ms. Hope/Mr. Kennedy
- Ms. Faith/Mr. Roosevelt

-__ Main Takeaway Themed Responses-

-Specific Evidence-

-

Pattern Names and Why to the question from Figure #2, "How does the district incorporate MCL in strategic planning:"

-

Conclusions based on Patterns of Findings:

-

Staff Participant:

- Ms. Smith/Mr. Will
- Ms. John/Mrs. Claire
- Ms. Doe/Mr. Draw
- N/A – Mr. Page

- __ Main Takeaway Themed Responses-

-Specific Evidence-

Pattern Names and Why to the question from Figure #2, "How does the district incorporate MCL in strategic planning:"

Conclusion of If-Then Pattern:

-

Comparisons of similarities/differences themes between the staff with those of the admin themes and Why:

-

<u>Transformational Technologies</u>

Administration:

- Ms. Hope/Mr. Kennedy
- Ms. Faith/Mr. Roosevelt

-__ Main Takeaway Themed Responses-

-Specific Evidence-

-

Pattern Names and Why to the question from Figure #2, “How does the district incorporate MCL in strategic planning:”

-

Conclusions based on Patterns of Findings:

-

Staff Participant:

- Ms. Smith/Mr. Will
- Ms. John/Mrs. Claire
- Ms. Doe/Mr. Draw
- N/A – Mr. Page

- __ Main Takeaway Themed Responses-

-Specific Evidence-

Pattern Names and Why to the question from Figure #2, “How does the district incorporate MCL in strategic planning:”

Conclusion of If-Then Pattern:

-

Comparisons of similarities/differences themes between the staff with those of the admin themes and Why:

-

<u>Leadership</u>

Administration:

- Ms. Hope/Mr. Kennedy
- Ms. Faith/Mr. Roosevelt

-__ Main Takeaway Themed Responses-

-Specific Evidence-

-

Pattern Names and Why to the question from Figure #2, “How does the district incorporate MCL in strategic planning:”

-

Conclusions based on Patterns of Findings:

-

Staff Participant:

- Ms. Smith/Mr. Will
- Ms. John/Mrs. Claire
- Ms. Doe/Mr. Draw
- N/A – Mr. Page

- __ Main Takeaway Themed Responses-

-Specific Evidence-

Pattern Names and Why to the question from Figure #2, “How does the district incorporate MCL in strategic planning:”

Conclusion of If-Then Pattern:

-

Comparisons of similarities/differences themes between the staff with those of the admin themes and Why:

-

Encountered Challenges

Administration:

- Ms. Hope/Mr. Kennedy
- Ms. Faith/Mr. Roosevelt

-__ Main Takeaway Themed Responses-

-Specific Evidence-

-

Pattern Names and Why to the question from Figure #2, “How does the district incorporate MCL in strategic planning:”

-

Conclusions based on Patterns of Findings:

-

Staff Participant:

- Ms. Smith/Mr. Will
- Ms. John/Mrs. Claire
- Ms. Doe/Mr. Draw
- N/A – Mr. Page

- __ Main Takeaway Themed Responses-

-Specific Evidence-

Pattern Names and Why to the question from Figure #2, “How does the district incorporate MCL in strategic planning:”

Conclusion of If-Then Pattern:

-

Comparisons of similarities/differences themes between the staff with those of the admin themes and Why:

-

Next Steps

Administration:

- Ms. Hope/Mr. Kennedy
- Ms. Faith/Mr. Roosevelt

-__ Main Takeaway Themed Responses-

-Specific Evidence-

-

Pattern Names and Why to the question from Figure #2, "How does the district incorporate MCL in strategic planning:"

-

Conclusions based on Patterns of Findings:

-

Staff Participant:

- Ms. Smith/Mr. Will
- Ms. John/Mrs. Claire
- Ms. Doe/Mr. Draw
- N/A – Mr. Page

- __ Main Takeaway Themed Responses-

-Specific Evidence-

Pattern Names and Why to the question from Figure #2, "How does the district incorporate MCL in strategic planning:"

Conclusion of If-Then Pattern:

-

Comparisons of similarities/differences themes between the staff with those of the admin themes and Why:

-

2. How is Mass Customized Learning being implemented and evaluated in the two schools? (Q 3-9/10)

Strategic Design

Administration:

- Ms. Hope/Mr. Kennedy
- Ms. Faith/Mr. Roosevelt

-__ Main Takeaway Themed Responses-

-Specific Evidence-

-

Pattern Names and Why to the question from Figure #2, "How does the district incorporate MCL in strategic planning:"

-

Conclusions based on Patterns of Findings:

-

Staff Participant:

- Ms. Smith/Mr. Will
- Ms. John/Mrs. Claire
- Ms. Doe/Mr. Draw
- N/A – Mr. Page

- __ Main Takeaway Themed Responses-

-Specific Evidence-

Pattern Names and Why to the question from Figure #2, "How does the district incorporate MCL in strategic planning:"

Conclusion of If-Then Pattern:

-

Comparisons of similarities/differences themes between the staff with those of the admin themes and Why:

-

<u>Transitional Factors</u>

Administration:

- Ms. Hope/Mr. Kennedy
- Ms. Faith/Mr. Roosevelt

-__ Main Takeaway Themed Responses-

-Specific Evidence-

-

Pattern Names and Why to the question from Figure #2, "How does the district incorporate MCL in strategic planning:"

-

Conclusions based on Patterns of Findings:

-

Staff Participant:

- Ms. Smith/Mr. Will
- Ms. John/Mrs. Claire
- Ms. Doe/Mr. Draw
- N/A – Mr. Page

- __ Main Takeaway Themed Responses-

-Specific Evidence-

Pattern Names and Why to the question from Figure #2, “How does the district incorporate MCL in strategic planning:”

Conclusion of If-Then Pattern:

-

Comparisons of similarities/differences themes between the staff with those of the admin themes and Why:

-

Transformational Technologies

Administration:

- Ms. Hope/Mr. Kennedy
- Ms. Faith/Mr. Roosevelt

-__ Main Takeaway Themed Responses-

-Specific Evidence-

-

Pattern Names and Why to the question from Figure #2, “How does the district incorporate MCL in strategic planning:”

-

Conclusions based on Patterns of Findings:

-

Staff Participant:

- Ms. Smith/Mr. Will
- Ms. John/Mrs. Claire
- Ms. Doe/Mr. Draw
- N/A – Mr. Page

- __ Main Takeaway Themed Responses-

-Specific Evidence-

Pattern Names and Why to the question from Figure #2, “How does the district incorporate MCL in strategic planning:”

Conclusion of If-Then Pattern:

-

Comparisons of similarities/differences themes between the staff with those of the admin themes and Why:

-

Leadership

Administration:

- Ms. Hope/Mr. Kennedy
- Ms. Faith/Mr. Roosevelt

-__ Main Takeaway Themed Responses-

-Specific Evidence-

-

Pattern Names and Why to the question from Figure #2, “How does the district incorporate MCL in strategic planning:”

-

Conclusions based on Patterns of Findings:

-

Staff Participant:

- Ms. Smith/Mr. Will
- Ms. John/Mrs. Claire
- Ms. Doe/Mr. Draw
- N/A – Mr. Page

- __ Main Takeaway Themed Responses-

-Specific Evidence-

Pattern Names and Why to the question from Figure #2, “How does the district incorporate MCL in strategic planning:”

Conclusion of If-Then Pattern:

-

Comparisons of similarities/differences themes between the staff with those of the admin themes and Why:

-

<u>Encountered Challenges</u>

Administration:

- Ms. Hope/Mr. Kennedy
- Ms. Faith/Mr. Roosevelt

-__ Main Takeaway Themed Responses-

-Specific Evidence-

-

Pattern Names and Why to the question from Figure #2, “How does the district incorporate MCL in strategic planning:”

-

Conclusions based on Patterns of Findings:

-

Staff Participant:

- Ms. Smith/Mr. Will
- Ms. John/Mrs. Claire
- Ms. Doe/Mr. Draw

- N/A – Mr. Page

- __ Main Takeaway Themed Responses-

-Specific Evidence-

Pattern Names and Why to the question from Figure #2, “How does the district incorporate MCL in strategic planning:”

Conclusion of If-Then Pattern:

-

Comparisons of similarities/differences themes between the staff with those of the admin themes and Why:

-

<u>Next Steps</u>

Administration:

- Ms. Hope/Mr. Kennedy
- Ms. Faith/Mr. Roosevelt

-__ Main Takeaway Themed Responses-

-Specific Evidence-

-

Pattern Names and Why to the question from Figure #2, “How does the district incorporate MCL in strategic planning:”

-

Conclusions based on Patterns of Findings:

-

Staff Participant:

- Ms. Smith/Mr. Will
- Ms. John/Mrs. Claire
- Ms. Doe/Mr. Draw
- N/A – Mr. Page

- __ Main Takeaway Themed Responses-

-Specific Evidence-

Pattern Names and Why to the question from Figure #2, “How does the district incorporate MCL in strategic planning:”

Conclusion of If-Then Pattern:

-

Comparisons of similarities/differences themes between the staff with those of the admin themes and Why:

-

BIBLIOGRAPHY

American Institutes for Research (2013). "Are personalized learning environments the next wave of k-12 education reform?" Education issue papers series. Washington DC. Found at www.air.org. Retrieved November 21, 2016.

American Institute for Research (2013). *Improving college and career readiness by incorporating social and emotional learning.* College and Career Readiness and Success Center. Retrieved August 10, 2016.

Appalachia Intermediate Unit 08 Mass Customized Learning Consortium (2017). Found at http://www.iu08.org/domain/154. Retrieved on May 3, 2017.

Apple.com (2017). Found at https://support.apple.com/education. Retrieved March 7, 2017.

Baker, G. & Goldberg, I. (1970). "The individualized learning system." *The Association for Supervision and Curriculum Development.* Found at www.ascd.org/ASCD/pdf/journals/ed_lead/el_197005_baker.pdf. Retrieved November 21, 2016.

Basye, D. (2014). *Personalized vs. differentiated vs. individualized learning*. ISTE website. Found at https://www.iste.org/explore/ArticleDetail?articleid=124. Retrieved July 2, 2016.

Billingham, J. (2012). "Strategic planning in education – 3 keys to success." *Thought Exchange*. Found at https://thoughtexchange.com/strategic-planning-in-education-3-keys-to-success/. Retrieved on March 1, 2017.

Black Hills Special Services Cooperative (2017). "Technology and innovation in education. Found at https://www.tie.net/. Retrieved on May 27, 2017.

Boss, S. (2011). *Project-based learning: a short history*. Edutopia. Found at https://www.edutopia.org/project-based-learning-history. Retrieved October 3, 2016.

Brusilovsky, P. (2003). Adaptive and intelligent web-based educational systems. International Journal of Artificial Intelligence in Education. Volume 13 (2–4): p. 159–172. Retrieved March 1, 2017.

Bulger, M. (2016). "Personalized learning: the conversations we're not having." *Data & Society*. Found at https://www.datasociety.net/pubs/ecl/PersonalizedLearning_primer_2016.pdf. Retrieved November 21, 2016.

Carnegie Mellon University website (2015). Found at http://www.cmu.edu/teaching/assessment/how to/basics/formative-summative.html. Retrieved July 2, 2016.

Central York School District Website (2017). Central york comprehensive plan. Found at http://www.boarddocs.com/pa/cyorksd/Board.nsf/files/9N5FEC3EBD6E/$file/Central-York-SD_Comprehensive-Plan_Entire%20Document.pdf. Retrieved on July 1, 2017.

Clark, T. (2008). "Online learning: pure potential." *Educational Leadership.* Found at http://www.ascd.org/publications/educational-leadership/may08/vol65/num08/Online-Learning@-Pure-Potential.aspx. Retrieved November 21, 2016.

Creasy, K. (2011). *The effects of a professional development school program on student achievement a measured by the Iowa test of basic skills, teacher perceptions of school climate, and pre-service teacher reflections.* University of, Akron. Akron, OH.

Crossman, A. (2017). What is a snowball sample in sociology?: what it is and when and how to use it. Found at https://www.thoughtco.com/snowball-sampling-3026730. Retrieved on July 14, 2017.

Darling-Hammond, L. (2005). Teaching as a profession: Lessons in teacher preparation and professional development. *Phi Delta Kappan*, 87(3), 237-240.

Diffen.com (2016). "Mission statement vs vision statement." Found at http://www.diffen.com/difference/Mission_Statement_vs_Vision_Statement. Retrieved March 1, 2017.

Duckworth, A. (2016). Grit : the power of passion and perseverance. New York. Scribner.

Dweck, C. (2006). Mindset: how you can fulfill your potential. London: Robinson.

Felix, J. (2017). *The unstoppable changing learner meets the immovable instructional paradigm*. Powerschool.com. Found at https://www.powerschool.com/resources/blog/the-unstoppable-changing-learner-meets-the-immovable-instructional-paradigm/. Retrieved on December 15, 2017.

Friday Institute for Educational Innovation (2014). "Technology-enabled personalized learning summit: findings and recommendations to accelerate implementation." National Summit, February 2014. North Carolina State University. Found at http://www.fi.ncsu.edu/wp-content/uploads/2014/02/TEPLS_report-FINAL-051415.pdf. Retrieved March 7, 2017.

Google.com (2017). Found at Google.com. Retrieved March 7, 2017.

Hahn, C. (2008). Doing qualitative research using your computer: a practical guide. SAGE Publications. Found at http://qrtips.com/Index.html. Retrieved on July 14, 2017.

Hattie, J. (2009). Visible learning: a synthesis of over 800 meta-analyses relating to achievement. New York, Routledge.

Heathers, G. (1977). "A working definition of individualized instruction." *The Association for Supervision and Curriculum Development.* Found at www.ascd.org/ASCD/pdf/journals/ed_lead/el_197702_heathers.pdf. Retrieved November 21, 2016.

Huitt, W. (2009). Humanism and open education. Educational Psychology Interactive. Valdosta, GA: Valdosta State University. Found at http://www.edpsycinteractive.org/topics/affect/humed.html. Retrieved on May 3, 2017.

Khan Academy (2017). Found at https://www.khanacademy.org/. Retrieved March 7, 2017.

Maine Cohort for Customized Learning (2017). Found at http://mainecustomizedlearning.org/. Retrieved May 3, 2017.

Marzano, R. J. (2010). Formative assessment & standards-based grading: the classroom strategies series. Bloomington, IN: Marzano Research.

Mass Customized Learning National Consortium (2017). Found at http://www.mclconsortium.org/mcl-national-alliance.html. Retrieved May 27, 2017.

McClaskey, K. & Bray, B. (2016). "Personalization vs differentiation vs individualization (PDI) chart (V3)." Personalize learning; transforming learning for all learners. Found at http://www.personalizelearning.com/p/home.html. Retrieved June 12, 2016.

McHugh, J. (2005). *Connecting to the 21st-Century Student. Educators must work to understand and motivate a new kind of digital learner*. Found at http://www.edutopia.org/ikid-digital-learner Retrieved January 10, 2016.

Merriam, S. (2009). *Qualitative Research: A Guide to Design and Implementation*. San Francisco: Jossey-Bass, John Wiley and Sons.

Miles, M., Huberman, A., & Saldaña, J. (2014). Qualitative data analysis: a methods sourcebook, edition 3. SAGE Publications.

National Center for Educational Statistics (2016). *Charter schools fast facts.* Found at https://nces.ed.gov/fastfacts/display.asp?id=30. Retrieved July 6, 2016.

National Center for Learning Disabilities Organization (2016). Found at http://www.ncld.org/. Retrieved July 6, 2016.

Oxford Dictionaries (2018). Oxford University Press. Found at https://www.oxforddictionaries.com/. Retrieved on March 1, 2018.

Pennsylvania Department of Education (PDE) (2016). Found at http://www.education.pa.gov/K-12/PACareerStandards/Resources/Pages/339CounselingPlan.aspx#tab-1. Retrieved on July 3, 2016.

Pennsylvania Department of Education School Performance Profile Website (2017). Central york school district. Found at http://paschoolperformance.org/Profile/86. Retrieved on July 1, 2017.

Pennsylvania Department of Education School Performance Profile Website (2017). Titusville area school district. Found at http://paschoolperformance.org/Profile/454. Retrieved on July 1, 2017.

Pritchard, R & Marshall, J. (2002). Professional development in „healthy" vs. „unhealthy" districts: top 10 characteristics based on research. *School Leadership & Management, 22*(2), 113-141. Found at http://www.eric.ed.gov/ERICWebPortal/search/detailmini.jsp?_nfpb=true&_&ERICExtSearch_SearchValue_0=EJ657254&ERICExtSearch_SearchType_0=no&accno=EJ657254. Retrieved February 29, 2016.

Regoniel, P. (2015). Conceptual framework: a step by step guide on how to make one. Found at http://simplyeducate.me/2015/01/05/conceptual-framework-guide/. Retrieved on July 10, 2017.

Richardson, Will (2012). Why school? how education must change when learning and information are everywhere. TED Conferences. Found at https://itunes.apple.com/us/book/why-school/id560216740?mt=11. Retrieved on February 15, 2018.

Rogers, A. & Rogers, Y. (2016). Global school net website. Found at http://www.globalschoolnet.org/index.cfm. Retrieved July 2, 2016.

Robert Wood Johnson Foundation (2008). Qualitative research guidelines project: semi-structured interviews. Found at http://www.qualres.org/HomeSemi-3629.html. Retrieved on July 14, 2017.

Rti action network (2016). Found at http://www.rtinetwork.org /. Retrieved on July 3, 2016.

Rush (1997). *Hold your fire.* "Prime mover." Found at https://www.bing.com/search?q=rush+prime+mover+lyrics&src=IE-TopResult&FORM=IETR02&conversationid=. Retrieved on April 18, 2018.

Saldaña, J. (2009). The coding manual for qualitative researchers. Zapadocesk Univerzitnl Knihovna v PLZNI. SAGE Publications. Thousand Oaks, California. Found at

http://stevescollection.weebly.com/uploads/1/3/8/6/13866629/saldana_2009_the-coding-manual-for-qualitative-researchers.pdf. Retrieved on August 3, 2017.

Sanders, W. & Rivers, J. (1996). Cumulative and residual effects of teachers on future student academic achievement. University of Tennessee Value Added Assessment Center, Knoxville Tennessee. Found at http://www.cgp.upenn.edu/pdf/Sanders_Rivers-TVASS_teacher%20effects.pdf. Retrieved February 19, 2016.

Schedoole.com (2018). Found at http://www.schedoole.com/. Retrieved on February 21, 2018.

Schwahn, C. & McGarvey, B. (2012). Inevitable: mass customized learning - learning in the age of empowerment. Lexington, KY: Chuck Schwahn & Bea McGarvey.

Schwahn, C. & McGarvey, B. (2014). Inevitable too!: the total leader embraces mass customized learning. Lexington, KY: Chuck Schwahn & Bea McGarvey.

Schwahn, C. & Spady, W. (1998). Total leaders: applying the best future-focused change strategies to education. Lanham, MD: Rowman & Littlefield Education.

Schwahn, C. & Spady, W. (2010). Total leaders 2.0 - leading in the age of empowerment. Lanham, MD: Rowman & Littlefield Education.

Smith, B. (2012). Defining college and career readiness: take action now. Academic Senate for California Community Colleges, Sacramento, California. Found at http://asccc.org/content/defining-college-and-career-readiness-take-action-now. Retrieved July 8, 2016.

Spady, W. & Schwahn, C. (2010). Learning communities 2.0 – educating in the age of empowerment. Lanham, MD: Rowman & Littlefield Education.

Sparks, S (2015). "Differentiated instruction; a primer." *Education Week,* 34, (20). Found at http://www.edweek.org/ew/articles/2015/01/28/differentiated-instruction-a-primer.html. Retrieved July 12, 2016.

South Dakota Department of Education Online (2017). Found at https://doe.sd.gov/pressroom/educationonline/2012/Mar/art_secretary.asp. Retrieved on May 3, 2017.

Technology and Innovation in Education Website (2017). Found at https://www.tie.net/. Retrieved July 12, 2016.

Thomas, E. & Larwin, K. (2016). *Examining effective characteristics of professional development in K-12 education since the inception of the no child left behind act of 2002: a meta-analytic Investigation.* Journal of Educational Leadership in Action. Lindenwood University. Found at http://www.lindenwood.edu/ela/issue04/larwin-lite.html. Retrieved February 28, 2016.

Titusville Area School District Website (2017). TASD comprehensive plan. Found at http://www.gorockets.org/Downloads/Titusville-Area-SD_Comprehensive-Plan_10-9-20143.pdf. Retrieved on July 2, 2017.

Tomlinson, C. (2015). Differentiation does, in fact, work. Found at http://www.queentessential net/differentiation-does-in-fact-work/. Retrieved July 12, 2016.

Tomlinson, C. & Allen. S. (2000). *Leadership for differentiating schools & classrooms.* Association for Supervision and Curriculum Development (ASCD). Found at http://eric.ed.gov/?q=Leadership+for+Differentiating+Schools+%26+Classrooms&id=ED469218. Retrieved July 2, 2016.

Toshalis, E., & Nakkula, M. (2012). *Motivation, engagement and student voice.* Students at the Center Series, Teaching and Learning in the Common Core, A Jobs for the Future Project. Retrieved November 21, 2016.

University of Washington, Bothell (2017). About hybrid and online learning. Found at https://www.uwb.edu/learningtech/hybrid-and-online-learning/hybrid-learning/about-hybrid-learning. Retrieved on February 10, 2018.

Visser, Y. & Visser L. (2012). *Trends and issues in distance education, 2nd edition.* Information Age Publishing, 95-111.

Warlick, D. (2013). *Individualized instruction vs. personalized learning*. 2 Cents Worth Blog. Found at http://2cents.onlearning.us/?p=4259. Retrieved on July 7, 2016.

Wiliam, D. (2012). *Teaching with passion*. North of England Education Conference. Leeds, UK, January 2012. Found at http://www.dylanwiliam.org/Dylan_Wiliams_website/Presentations_html. Retrieved on February 28, 2016.

Woods, M. (2011). "Interviewing for research and analysing qualitative data: an overview." Massey University: School of Health and Social Services. Found at http://owll.massey.ac.nz/pdf/interviewing-for-research-and-analysing-qualitative-data.pdf. Retrieved on July 21, 2017.